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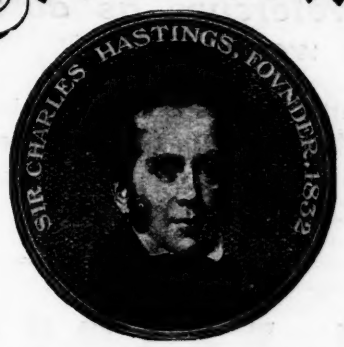

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THE PHYSICAL STATE OF THE BLOOD SERUM IN RELATION TO ITS AGGLUTININ AND ANTIBODY CONTENT:

THE EFFECT OF FRICTION AND PRESSURE.

BY

C. J. BOND, C.M.G., F.R.C.S., HON. COLONEL A.M.S.,

HONORARY CONSULTING SURGEON, NORTHERN COMMAND; HONORARY CONSULTING SURGEON TO THE LEICESTER ROYAL INFIRMARY; MEMBER OF THE MEDICAL RESEARCH COMMITTEE.

Two years ago I noticed that if two separate drops of a blood serum containing haemagglutinin were allowed to dry on a slide and if one of the drops was dissolved in normal saline solution without friction, while the other was rubbed with a glass rod, the drop which had undergone solution without friction retained its full haemagglutinative capacity, but the drop which had been rubbed failed to agglutinate the red cells or did so very feebly.

Starting from this point I next investigated the effect of combined friction and pressure on certain blood serums of known haemagglutinative capacity. If a serum is ground in a mortar and the turbid liquid then centrifuged a white sediment falls, leaving a more or less clear supernatant fluid. This clear fluid is then pipetted off and again subjected to the grinding process. A second precipitate is thus obtained on centrifuging the liquid, often more rapidly and in larger volume than on the first grinding. The process of grinding, centrifuging, and pipetting off the clear fluid can be repeated a number of times with a gradual loss of volume of fluid partly due to froth formation. This frothing is more noticeable in some serums than in others. It frequently occurs at the second or third grinding with horse, ox, sheep, and some guinea-pigs' serums.

By this fractional mechanical process the constitution of the serum can be profoundly modified. A remarkable change is brought about not only in the physical condition, but also in the haemagglutinins and other antibodies. It will be convenient to describe these changes as they affect the supernatant fluid, which we may designate liquor 1, liquor 2, liquor 3, etc., according to the number of times the grinding process has been applied, and the sediment, which may be designated 1, 2, and 3, etc., in the same way.

The Liquor.

Fig. 1 illustrates the effect of subjecting horse serum which powerfully agglutinates human (C. J. B.) washed red cells and sheep's red cells to three successive fractional grinding processes. The circles represent a drop of the serum, or liquor, or sediment to which the red cells are added. The + and − signs in each circle indicate the presence or absence of agglutinating capacity, while the numbers 1, 2, 3 indicate the number of times the fluid has been ground in the mortar and the precipitate separated by centrifuging.

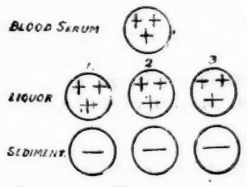

FIG. 1. — Horse serum. Reaction to human (C. J. B.) red cells.

In the case of horse's serum free haemagglutinin is found in the clear liquor after three fractional grindings, and it is absent from the sediment after this has been washed in normal saline solution and reprecipitated by centrifuging. This result with horse serum is also characteristic of human and some other animal blood serums which I have examined. In some cases the liquor may even show a higher haemagglutinin content than the blood serum from which it has been obtained; thus Fig. 2 represents a human serum (No. 13) which only contained one (+) degree of haemagglutinating capacity for (C. J. B.) red cells, whereas liquor 1 contained two (++) degrees, and liquor 2 three (+++) degrees. If the original serum contains no trace of agglutinating capacity for given red cells, then the liquors obtained by grinding it are also devoid of haemagglutinin for the same red cells. It is, however, necessary to point out that some serums if examined hastily may be set down as negative, whereas if a drop of such a serum on a slide be mixed with a measured volume of a suspension of washed red cells and gently agitated, and then allowed to stand for some time, a trace of agglutinative action will be seen on gentle re-agitation, and such a serum must not be recorded as negative.

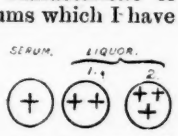

FIG. 2.—Serum 13. Reaction with C. J. B. red cells.

This raises the important question of the specificity of the haemagglutinin reaction.

Specificity of the Haemagglutinin Reaction in Blood Serums and Liquors after Grinding.

The clumping of appropriate red cells by normal untreated blood serum is, of course, a highly specific reaction, and the specificity has a practical application in the selection of donors and recipients belonging to appropriate groups in the operation of blood transfusion. It is important to find, therefore, that, in liquors obtained by subjecting such serums to the fractional grinding process, the haemagglutinin reaction retains its specific character. This is true as a general statement; it is possible, however, that as the result of standing, or more rapidly by mechanical treatment, the specificity may be reduced and a serum or liquor may become agglutinative to certain red cells to which it formerly only showed a trace of agglutinative action. This specific character is shown by the non-agglutinating serum 2 and the powerfully agglutinative serum 11 (see Figs. 3 and 4). In serum 2

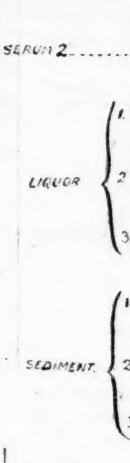

FIG. 3.

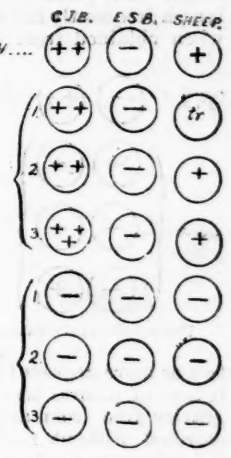

FIG. 4.—Serum 11.

the − agglutinating quality appears in both liquors and sediments in relation to human (C. J. B. and E. S. B.) and to sheep's red cells. Serum 11, on the other hand (see Fig. 4), agglutinates C. J. B. red cells two (+ +) degrees, sheep's red cells one (+) degree, and E. S. B. red cells − degree.

Here the specific action of the haemagglutinin reaction is shown in the liquor in differential relation to these three varieties of red cells.

Increase of Haemagglutinative Capacity on Standing.

It will be observed that in serum 11 (Fig. 4) the haemagglutinin content increases in the liquor as the fractional grinding process proceeds. Liquor 3 shows a higher agglutinating capacity to C. J. B. red cells than the untreated serum. This heightening of agglutinin content in a serum by mechanical treatment was also previously recorded in Fig. 2 (serum 13), and it is on a par with what occurs in some serums as the result of standing. Thus serum 17, marked as negative (but which may have contained a trace of agglutinin to C. J. B. red cells), was pipetted off the blood clot and allowed to stand at room temperature for seven days. When retested it gave a (+) reaction with the same red cells. The same kind of change which tends to occur slowly in a serum as the result of standing is brought about more rapidly by the mechanical effect of friction and pressure. The grinding process seems to set free a certain amount of locked-up haemagglutinin and at the same time separates out a solid residue in the form of a sediment which is non-agglutinative.

The Sediment.

In the case of nearly all blood serums so far submitted to the fractional mechanical process, the sediments obtained on centrifuging the subbed serum up to the third and even the sixth term have failed to give any haemagglutinin reaction with appropriate red cells.

The various sediments have been washed one or more times in normal saline solution, in which they are very sparingly, if at all, soluble, and a drop of the suspension mixed with the washed red cells on a slide.

This presence of free haemagglutinin in the liquor and its absence in the sediment is in striking contrast to what we find in the case of transudates, exudates, and other body fluids.

Chemical Composition of the Sediment.

The chemical composition of the sediment obtained by grinding the blood serum requires a more elaborate chemical investigation than I have yet been able to give to it. It gives a blue, not violet, colour with the xanthoproteic test, and only a faint trace of black coloration (lead sulphide) with Molisch's test. There is no reduction with Fehling's solution, and the sediment is not appreciably soluble in ether or chloroform, nor does it stain black with osmic acid.

Transudates, Exudates, Secretions, and Excretions.

As a general statement it is true to say that peritoneal and pleural effusions, cerebro-spinal fluid, and lymph frequently fail to give any free haemagglutinin even when obtained from patients whose blood serum shows

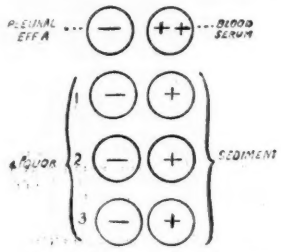

FIG. 5.—Pleural effusion A.

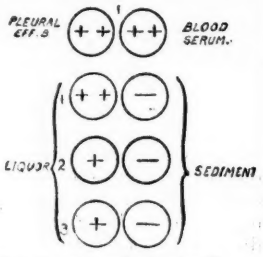

FIG. 6.—Pleural effusion B.

two or more degrees (++) of agglutinative capacity. This is true of pleural and peritoneal effusions of low specific gravity, free from any considerable cellular element, and secreted without marked inflammatory reaction. The following examination of a serous fluid removed by aspiration from the chest of the same patient at an interval of six weeks illustrates this point.

Effusion (*a*) was a pale watery fluid of low specific gravity, removed from a patient, A. W., whose blood serum was (++) to C. J. B. red cells. The fluid itself gave a (−) reaction with the same red cells. When ground in a mortar, liquors 1, 2, and 3 contained no free haemagglutinin, while the corresponding sediments 1, 2, and 3 showed (+) degrees with the same red cells (see Fig. 5). Six weeks later a second aspiration withdrew a yellow fluid of higher specific gravity closely resembling blood serum. This gave a different result on grinding (see Fig. 6). This second effusion agglu-

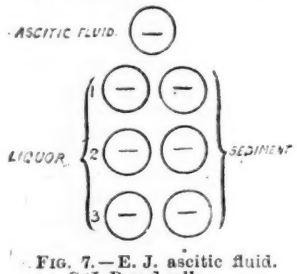

FIG. 7.—E. J. ascitic fluid. C. J. B. red cells.

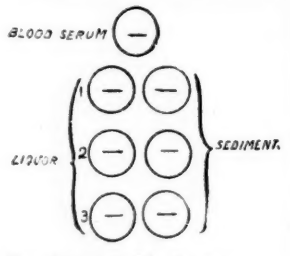

FIG. 8.—E. J. blood serum. C. J. B. blood cells.

tinated (++) C. J. B. red cells, and the liquors 1, 2, and 3 obtained from it were also agglutinative, while the corresponding sediments gave no reaction. Thus the haemagglutinin existed in these two serous fluids in quite different conditions. The first, which resembled a transudate, contained no free haemagglutinin, but haemagglutinin was recovered from the sediment. In the second fluid, which resembled a blood serum, haemagglutinin was present in the free state in the untreated fluid, and was recovered from the liquor but not from the sediment. I think this is a suggestive fact and one which bears on the problem of the changes undergone by blood plasma when it passes out of the capillaries and comes in contact with the tissue cells. The haemagglutinin ceases to exist in the free state in this altered fluid though it remains in some (at present unknown) combined form, and can be recovered again in the free state by subjecting the fluid to a mechanical process which includes friction and pressure. As a general rule haemagglutinin cannot be recovered from the liquor or sediment of fluids obtained from individuals whose blood serum contains no haemagglutinin. A sample of ascitic fluid from a patient whose blood serum was negative to C. J. B. red cells was itself negative, and Figs. 7 and 8 show the result obtained respectively from the blood serum and the ascitic fluid in this case. On the other hand, a peritoneal effusion poured out during an acute reaction to an infective process in another patient gave a (++) result in the liquor and a (−) result in the sediment. (See Fig. 9.)

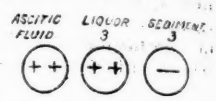

FIG. 9.—B. D. ascitic fluid. C. J. B. red cells.

The Cerebro-spinal Fluid.

If we regard the cerebro-spinal fluid as the lymph of the brain and as blood plasma altered by the action of the endothelial cells of the choroid plexuses and the serous meninges, it is interesting to find that when subjected to the fractionating grinding process this fluid obeys the rule which we have found to apply to other exudates. I have investigated by this method the cerebro-

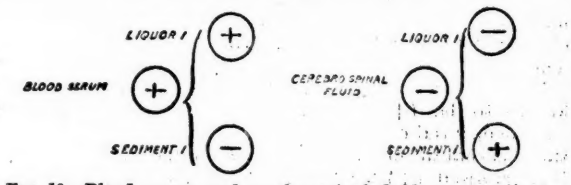

FIG. 10.—Blood serum and cerebro-spinal fluid, same patient. C. J. B. red cells.

spinal fluid and the blood serum from the same individual. The blood serum was positive (8 doses) and the cerebro-spinal fluid negative to the Wassermann test. The blood serum agglutinated (+) C. J. B. red cells while the cerebro-spinal fluid gave a (−) result. (See Fig. 10.) The blood serum of this patient when treated by the grinding process resembled normal blood serum and gave a (+) in the liquor and a (−) in the sediment. The cerebro-spinal fluid in the same individual, on the other hand, which was (−) to C. J. B. red cells in the untreated condition, gave a (+) sign with the same red cells in the sediment and a (−) sign in the liquor.

Non-specificity of the Haemagglutinin Reaction in Exudates and Secretions.

We have already seen that when a blood serum is submitted to the grinding process the haemagglutinin which

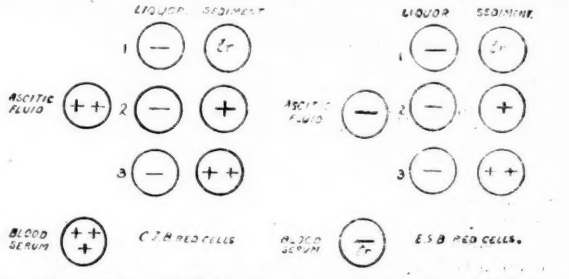

FIG. 11.—B. W. ascitic fluid. Reaction with C. J. B. and E. S. B. red cells.

is recovered from the liquor preserves (for the most part) its specific character. That is to say, it only agglutinates such varieties of red cells as are agglutinated by the corresponding untreated serum. This specificity of reaction frequently disappears when transudates, exudates, and other body fluids are submitted to the grinding

process. For instance, a sample of ascitic fluid obtained from a patient with heart disease was examined by this method. It was found to be (++) to C. J. B. red cells and (−) to E. S. B. red cells. The blood serum of this patient showed (+++) to C. J. B. red cells and a trace only to E. S. B. red cells. When this ascitic fluid was submitted to three fractional grindings the haemagglutinin recovered from the sediment showed the same degree of agglutinative capacity to both kinds of red cells. Fig. 11 illustrates this result.

The Saliva.

A haemagglutinin has been recovered from the sediment obtained by submitting salivary fluid to the grinding process. This recovered haemagglutinin agglutinated certain varieties of red cells which were not agglutinated by the blood serum of the same individual. There was, however, some evidence of a partial specificity in the reaction because the agglutination was delayed and less complete with these incompatible red cells than with other red cells which were agglutinable by the blood serum of the patient.

Mucus.

It is of interest to find that haemagglutinin can be obtained from the sediments when nasal mucus is submitted to the grinding process. This bears on the important problem of the agglutinin and antibody content of mucus and of the part played by the mucous secretions in combating invasion by pathogenic organisms.

Milk.

I have submitted samples of human, sheep's and cow's milk to the fractional grinding process. The results are of considerable interest and will, I hope, be dealt with more fully in a later communication. A sample of human milk was obtained from a patient whose blood serum was known to be (++) agglutinative to human (C. J. B.) and sheep's red cells. The milk was first centrifuged and the supernatant cream removed, the milk *minus* the cream then showed (+) agglutination to the same red cells. Some of the slightly turbid yellow fluid was then submitted to the grinding process and three successive liquors

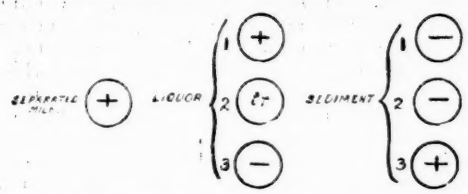

FIG. 12.—Human milk. Reaction with C. J. B. red cells.

and sediments were obtained. Fig. 12 shows (+) haemagglutinin in liquor 1, a trace only in liquor 2, and (−) in liquor 3. The corresponding sediments show (−) haemagglutinin in sediments 1 and 2, and (+) in sediment 3. This corresponding descent and ascent of haemagglutinin content in liquor and sediment is important, and suggests that a passage of haemagglutinin from the combined to the free state takes place as the mechanical treatment proceeds. Speaking generally, we may say that human milk, as a secretion, stands midway between blood serum on the one hand and an exudate like lymph on the other, from the haemagglutinin point of view. One point of considerable practical importance came out in the course of this investigation. Boiling destroys all the haemagglutinin in human milk, whereas pasteurization—that is, the subjecting of the milk to a temperature of 60° C. for forty minutes—does not affect the haemagglutinin content as far as the reaction to human (C. J. B.) red cells is concerned, although it reduces the power of clumping sheep's red cells.

It is interesting to note also that the haemagglutinins do not disappear from human milk when preserved for a considerable time, provided the cream has been removed by separation. A sample of centrifuged separated human milk which had remained in a plugged sterile test tube for six months at room temperature gave when tested (++) of haemagglutinative capacity to human and sheep's red cells.

It is interesting to compare sheep's milk and cow's milk with human milk from the haemagglutinative point of view. So far, samples of centrifuged separated milk from these animals have given (−) results with human (C. J. B. and E. S. B.) red cells. When the milk was ground, traces only appeared in sediments 2 and 3 in cow's milk, but we must not forget the factor of individual difference. Some sheep's blood serums are (+) and some (−) to the same red cells, and the same may be true of the blood serums, and possibly the milk of cows.

If later investigation should confirm the fact that, on the whole, cow's milk contains less haemagglutinin capable of acting on human red cells than human milk, a further contribution will be added to the comparative study of human and cow's milk. The destruction of the haemagglutinins by boiling but not by pasteurization has not, as far as I can ascertain, been recorded previously. I do not find it mentioned in Dr. Lane-Claypon's book on *Milk in its Hygienic Relations.*

Excretions: the Urine.

Urine may be regarded as the type of a body fluid in which excretory largely replace secretory characters. Urine probably contains (in a degraded form) waste products of the metabolic activities of body cells of *all* kinds. Hence it is a matter of interest to find that the haemagglutinin in sediments obtained by submitting urine to the grinding process lose their specific character. That is to say, they no longer only agglutinate such red cells as are agglutinated by the corresponding blood serum. Fig. 13 illustrates the result in a normal urine from an individual whose blood serum was (−) to C. J. B., E. S. B., and sheep's red cells. In this urine sediments 1 and 2 show (+) to all these varieties of red cells; the corresponding liquors, on the other hand, are (−), though they give a trace of reaction to sheep's red cells. We may now compare with this healthy urine an albuminous urine from a patient with acute nephritis (see Fig. 14). The blood serum of this patient contained a trace only of agglutinin to C. J. B. red cells and was (+) to sheep's and (−) to E. S. B. red cells. Liquor 3 gave a (−) result with C. J. B. and E. S. B. red cells, but (+) result with sheep's red cells, to which the blood serum of the patient was also (+). Sediment 3 gave (++) with C. J. B., (++) with sheep's, and (+) with E. S. B. red cells.

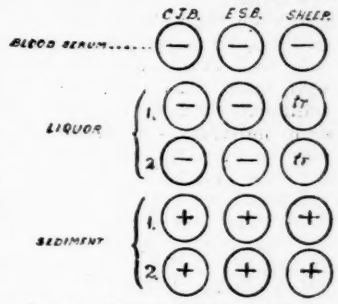

FIG. 13.—Normal urine. Reaction with C. J. B., E. S. B., and sheep's red cells. From an individual with blood serum negative to same red cells.

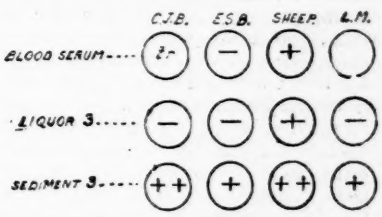

FIG. 14.—Albuminous urine (L. M.); acute nephritis.

In the BRITISH MEDICAL JOURNAL of March 2nd, 1918, I suggested that the diminution of haemagglutinin content observed in the blood serums of some cases of trench nephritis might be due to a leakage of the haemagglutinin with the globulins and serum albumins escaping in the urine.* It is of interest, therefore, to find some slight indication of specificity of action in the haemagglutinin obtained by grinding the albuminous urine from a patient with nephritis. Thus liquor 1 resembles the blood serum and is (+) to sheep's red cells, and although the haemagglutinin from sediment 3 is (+) instead of (−) to E. S. B. red cells, the reaction is less rapid and complete than with C. J. B. or with sheep's cells, to both of which the blood serum of the patient is more positive.

The fact that the sediment obtained by grinding both a normal and an albuminous urine is capable of

* Since this was written free haemagglutinin, specific in character, has been demonstrated in specimens of albuminous urines from two cases of nephritis.

agglutinating the red cells of the individual secreting the urine shows the extent to which the specificity of the reaction has been lost. (See Fig. 14.) At first sight this seems to prove too much, and suggests that the factor, whatever it be, in the sediment which clumps the native red cells is merely an accidental product of the grinding process, and that it has no real relation to haemagglutinins pre-existing in the blood serum, inasmuch as it occurs in the urines of individuals with non-agglutinating as well as with agglutinating blood serums. There are, however, certain facts which suggest that the haemagglutinins recovered from these urines by grinding do bear some relation to haemagglutinins pre-existing in the blood serum of these individuals either in the free or a locked-up state. The appearance of haemagglutinins in blood serums on standing and the increased volume in the liquor of a ground serum suggest that the difference between a non-agglutinating and an agglutinating serum is not due to the entire absence of haemagglutinin in the former but to the fact that it exists in a combined or locked-up form in which it cannot exercise any effect on the red cells until liberated by certain chemical changes which take place on standing or by the grinding process.

Further, if the haemagglutinins which appear in the liquor or sediment when a blood serum or exudate is ground are only the accidental result of the grinding process then they should appear equally in all liquors and sediments. But they are absent from the liquors and sediments obtained by grinding blood serums and exudates from individuals whose blood serums show no trace of any haemagglutinative action on any red cells. There is evidence to show that the blood serum of every individual contains haemagglutinins of one kind or another. Thus my own blood serum has failed to agglutinate the red cells of some hundreds of individuals with whom it has been tested. It belongs to group 4. At the same time my blood serum strongly agglutinates the washed red cells of the pigeon. Hence we are not justified in assuming that the haemagglutinins which appear in the sediments of a ground urine are entirely new products which bear no relationship to haemagglutinins existing in the blood serum of the same individual in a combined form. It is true haemagglutinins of a non-specific kind appeared in sediment 3 of a normal as well as an albuminous urine, but in these cases also the first and second sediments contained no haemagglutinin. On the whole, therefore, I am inclined to think that the non-specific haemagglutinin recovered from urine mechanically treated does bear some relation to a haemagglutinin previously existing in the blood serum in a combined and inactive form. If, on the other hand, it should eventually prove to be possible to produce *de novo* a substance having non-specific haemagglutinative activity in a fluid like the urine by submitting it to friction with pressure, an important point will have been ascertained and one which may be useful in differentiating certain abnormal from normal urines. A word is necessary at this stage concerning the part taken by the sediment in the haemagglutinin reaction. Everything points to the fact that the sediment itself contains no haemagglutinin, but that these substances are locked up in, and are carried down with, the precipitate when the ground liquid is centrifuged. On standing for some time in normal saline solution a sediment may give off haemagglutinin, the clear solution when pipetted off being actively haemagglutinative. Thus the normal saline solution in which sediment 3 from the albuminous urine had stood for four days was (+) to sheep, (+) to E. S. B., and (trace) to C. J. B. red cells. The sediment obtained by grinding a blood serum or an exudate also probably acts as a carrier only of haemagglutinin.

The Effect of Grinding on the Complement Content in Guinea-pig's Serum.

Dr. Mackarell, pathologist to the Leicester Royal Infirmary, has kindly tested with a suitable haemolytic system several samples of serum from different guinea-pigs for complement content after treatment by the grinding process. The following are the details of one such experiment. A sample of guinea-pig's serum was divided into two volumes, A and B. Volume A was submitted to three fractional grindings, and liquor 3 and sediment 3 were each tested for complement content, with the following result:

Liquor 3 (diluted 1 in 3):

0.005 c.cm.	...	No haemolysis
0.01 ,,	...	Partially haemolyzed
0.015 ,,	...	Wholly haemolyzed
0.02 ,,	...	Wholly haemolyzed

Sediment 3 in normal saline solution:

0.1 c.cm.	...	No haemolysis
0.2 ,,	...	No haemolysis
0.3 ,,	...	No haemolysis
0.4 ,,	...	No haemolysis

Volume B, the untreated control serum (diluted 1 in 3), gave:

0.005 c.cm.	...	Almost complete haemolysis
0.01 ,,	...	Complete haemolysis
0.015 ,,	...	Complete haemolysis
0.02 ,,	...	Complete haemolysis

This result, confirmed by other tests, shows (1) that a slight diminution of complement occurs in a guinea-pig's serum when submitted to the mechanical effect of friction and pressure; it also shows (2) that the complement (like the haemagglutinin) passes over in the liquor and is not attached to or precipitated with the sediment.

The Effect of the Grinding Process on Syphilitic Blood Serums.

Dr. Mackarell has also kindly investigated the effect on the complement deviating factor of submitting positive serums to the fractional grinding process. In a number of serums positive (over ten doses) as tested by the Wassermann test, the liquor up to the third term retained its complement deviating power, while the corresponding sediment was negative. Evidently the substance or substances, whatever these may be, in the syphilitic serum which have to do with complement deviation are not thrown down with the precipitate when such a serum is ground in a mortar; they pass over with the liquor. One sample of negative serum was submitted to the grinding process in order to ascertain whether any complement deviating substance was produced; the result, however, was negative.

The Effect of Grinding on the Bacterio-agglutinin Content of a Blood Serum.

Captain Heath, R.A.M.C., pathologist to the 5th Northern Hospital, has kindly tested a number of blood serums which had previously been submitted to the grinding process to ascertain: (1) Whether any effect had been produced in the agglutinating titre of the serum so

DILUTION OF SERUM	100	200	400	600	800	1000	2000	4000	6000	8000	10000	15000	20000	30000	50000	100000	
CONTROL SERUM.	+	+	+	+	+	+	+	+	+	+	+	–	–	–	–	–	B. DYSENTERIAE VAR. FLEXNER.
RUBBED SERUM.	+	+	+	+	+	+	+	+	+	+	+	+	–	–	–	–	
CONTROL SERUM	+	+	+	+	+	+	+	–	–	–	–	–	–	–	–	–	B. DYSENTERIAE VAR. ROSEN.
RUBBED SERUM	+	+	+	+	+	+	+	+	+	–	–	–	–	–	–	–	
CONTROL SERUM.	+	+	+	+	+	+	+	+	+	–	–	–	–	–	–	–	B. COLI COMMUNIS.
RUBBED SERUM	+	+	+	+	+	+	+	+	–	–	–	–	–	–	–	–	

FIG. 15.—Shows increase in agglutination titre in polyvalent Flexner Y serum, produced by grinding.

treated, and (2) whether the bacterio-agglutinins present in the serum still retained their specific character. Fig. 15 represents in tabular form the result obtained in a polyvalent Flexner Y serum, R.A.M. College, dilution 1 in 100,

DILUTION OF SERUM	1:40	1:100	1:400	1:600	1:800	1:1000	1:1200	1:1400	1:1600	1:1800	1:2000	1:2400	
CONTROL SERUM	+	+	+	+	+	+	+	+	–	–	–	–	PARATYPHOID B.
RUBBED SERUM	+	+	+	+	+	+	+	+	+	+	+	–	

FIG. 16.—Stock paratyphoid B serum.

titre 1 in 4,000. Fig. 16 gives the result in a paratyphoid B serum. From these and other examples it seems clear that by submitting a serum to a mechanical process like grinding it is possible to cause (1) a marked increase in agglutinating capacity to certain organisms. This increase may amount in some cases to 100 per cent. when compared with the untreated serum. (2) This increase in agglutinative capacity is specific in character. The agglutinating titre of the treated serum to other species of organisms is not raised above that of the control serum. (3) The agglutinating substances pass into the liquor and are not precipitated with the sediment. In the experiment recorded the serums were submitted to three fractional

grindings and liquor 3 and sediment 3 tested for agglutinin content against the untreated or control serum. In each case the titre of the liquor was markedly increased, while that of the sediment and the normal saline solution in which the sediment was suspended was considerably below that of the control serum.

General Conclusions.

The above observations seem to show that by submitting blood serum and other body fluids to a mechanical process, which includes friction combined with pressure, physical changes can be brought about in these fluids which throw some light on the condition in which haemagglutinins, bacterial agglutinins, complement, complement deviating substances, and antibodies exist in the blood serum. They suggest that the blood serum and the body fluids, the secretions and excretions, form a graded series with the blood serum at one end, and the excretions, such as the urine, at the other. The haemagglutinins seem to be present for the most part in a free state in the blood serum, and in a more or less combined form in the transudates and exudates, while in excretions, like the urine, the haemagglutinins when liberated and recovered in the free state are found to have lost their specific character. This is shown by testing the agglutinative capacity of the fractional series of liquors and sediments to the same varieties of washed red cells. Not only do the haemagglutinins show marked differences of composition in the different liquors and sediments, but they also vary according to the extent to which the fluid has been submitted to the mechanical fractional process. This is also true of the bacterial agglutinins contained in blood serum, and it has been found possible by these means to considerably increase the agglutinating titre of a blood serum to a given organism while retaining at the same time the specificity of the reaction. This suggests that it may be possible to raise the agglutinating capacity of a serum by a mechanical process *in vitro* for therapeutic purposes. These observations also show that the complement deviating factor in positive syphilitic serums passes over along with the haemagglutinins and bacterial agglutinins into the liquor, and is not thrown down with the sediment.

A word must be added about the relative leuco-toxicity of the liquors and sediments obtained by the fractional grinding treatment of blood serums and body fluids. In the BRITISH MEDICAL JOURNAL, December 8th, 1917, and January 11th, 1919, I drew attention to the fact that some blood serums are far more toxic to the leucocytes of some individuals than to those of other persons, my own (C. J. B.) leucocytes being taken as a standard. Thus, if a drop of the serum to be tested is incubated in a closed cell with a drop of whole (C. J. B.) blood, the effect of the foreign serum on the vitality of the leucocytes can be ascertained. Emigration from the clot, capacity to elaborate iodophil substances and phagocytic activity are taken as the standard of vitality. I find that out of 80 different blood serums from different individuals 13 were very toxic, 25 were slightly toxic, and 42 were non-toxic to my own leucocytes. In practically all cases the sediment is markedly toxic, while the liquor may or may not be toxic to the same leucocytes. In a few cases the liquor obtained by grinding a toxic serum has become non-toxic to the same cells. This problem of the leuco-toxicity of different blood serums is of considerable practical importance in regard to the operation of blood transfusion and vaccine and serum therapy. From some recent observations I am inclined to regard horse serum as markedly toxic to the leucocytes of certain individuals, and this fact may have some reference to the varying liability to serum sickness shown by different individuals.

Finally, while I am fully aware of the incomplete character of these observations, I think that they show the great importance of certain physical factors—for instance, friction and pressure—in relation to the antibody content of the blood serum and other body fluids. I am hopeful that the treatment of these fluids by a mechanical process which combines friction and pressure may open up a road for the further investigation of the biochemistry of the blood serum.

A FULLY equipped hospital, to be maintained by the French Government, has been opened at Athens by the French Minister.

A REPORT ON TWO CASES OF ENCEPHALITIS LETHARGICA.

BY

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AND

CAPTAIN E. J. COOMBE, R.A.M.C.(S.R.).

THE disease which has been termed "encephalitis lethargica" appears to have been first observed in Vienna during the winter of 1916–17, and thirteen cases have been described by C. von Economo.[1] It does not appear that any connexion between these cases and an epidemic of influenza was observed, but the two cases described below are of interest on account of their occurrence during the epidemic of influenza in October, 1918, and also because the micro-organism found in the cerebro-spinal fluid in both cases was not the diplo-streptococcus found by von Eisner in an ape infected by material from some of these cases in the Vienna epidemic.

The micro-organism found by one of us (J. R. C.) appeared to be morphologically identical with that which was found in the blood, sputum, pleural fluid, and cerebro-spinal fluid in cases of influenza, trench fever, and nephritis among British troops in France during the autumn of 1917 and the spring and summer of 1918, described by Major-General Sir John Rose Bradford, A.M.S., Captain E. F. Bashford, R.A.M.C., and Captain J. A. Wilson, R.A.M.C., in their "preliminary report on a 'filter-passing' virus to the Director-General Medical Services, British Armies in France."[2] The filter-passing Gram-positive organism described by these observers as having been found in cases of encephalitis lethargica is regarded by them as allied to that which has been isolated in cases of polyneuritis, but it does not appear that this organism has been found in cases of typical influenza followed by encephalitis lethargica.

Both of the cases described below were admitted as influenza in which pneumonia supervened prior to the onset of cerebral symptoms.

Case I.

Pte. W. H. L., aged 22, was admitted to the Military Hospital, Fargo, Salisbury Plain, on October 19th, 1918, from Southern Command Malaria Centre, Larkhill, where he had been undergoing treatment for malaria contracted at Salonica.

He was very ill on admission, with severe headache, pains in limbs, and generalized bronchopneumonia; the temperature was 103°. He was given 5 c.cm. polyvalent vaccine (*B. influenzae*, *Streptococcus longus*, and *Micrococcus catarrhalis*). Some improvement was noted, and the vaccine was repeated at intervals of three or four days, but the headache persisted and the temperature oscillated between 100° and 103°. The spleen was not palpable, and blood films were examined for malarial parasites, as it was thought that the persistent fever might be due to malignant tertian malaria. No malarial parasites were found. The patient became very emaciated, he was somnolent, and lay curled up in bed with head retracted. When awake he complained of persistent severe headache, and it was thought that he might be suffering from acute tuberculosis with meningitis. The pupils were equal, dilated, and reacted sluggishly to light. The optic discs were normal, and no choroidal tubercles could be seen. A differential blood count showed no lymphocytosis, but, on the contrary, there was a distinct leucopenia. The relative proportion of white cells being normal—but the total number was only 12,000 per c.cm. on admission—this was regarded as pointing to chronic malaria, and quinine hydrochlor. gr. xx was given thrice daily, without benefit.

On October 29th the temperature rose to 104°, pulse rate 110, respiration rate 24; rigidity of neck and Kernig's sign were present. The latter symptoms persisted until November 6th, when lumbar puncture was performed, but the cerebro-spinal fluid was normal.

November 16th. The condition had improved since November 6th, but there was persistent pyrexia.

November 20th. Dullness left apex and upper lobe and apex of lower lobe, crepitations and tubular breathing. Curvature of spine in dorsal region.

November 26th. The tubercle bacillus was not found in the sputum, and *x*-ray examination revealed no sign of tuberculosis in the chest. Blood count:

Reds	4,000,000	
Whites	5,000	
Haemoglobin content	80	per cent.
Colour index	1	
Mast cells	0.5	per cent.
Polymorphonuclears	79	,,
Eosinophils	5	,,
Small lymphocytes	5	,,
Large lymphocytes	15	,,
Transitionals	0.5	,,

On January 2nd, 1919, Captain E. J. Coombe took over the case. The patient lay in a lethargic state, curled up; the head was retracted; very wasted. When awakened was fairly intelligent, but he fell asleep immediately he was left alone. No convulsions; no "cephalic cry." Intense pain on moving head, slight headache at times. Pupils widely dilated. Paralysis of lower limbs, incontinence of urine and faeces. Ophthalmoscopic examination (artificial dilatation of pupils not necessary): Optic disc pale; blood vessels engorged. Diagnosis: Encephalitis lethargica.

On January 3rd lumbar puncture was performed, and 20 to 30 c.cm. fluid withdrawn; it was under great pressure, milky, and somewhat opalescent. Ten grains of urotropin in 10 c.cm. of physiological salt solution were injected into the spinal canal. The patient improved somewhat after the lumbar puncture, and on January 5th was less lethargic.

January 6th. Report on cerebro-spinal fluid: Milky; 20 c.cm. centrifugalized gave a greenish deposit ½ in. in depth. Polynuclear leucocytosis of 1,000. Stained films (Gram and Leishman) showed a minute coccus Gram-positive, chiefly extracellular, but occurring occasionally intracellularly; usually diplococci and having apparently no capsule. Seen also in short chains of 3 to 5 cocci. All attempts at growth on agar, blood serum, Loeffler's serum, and haemoglobin agar failed. Anaërobic cultures could not be tried as the laboratory has not the equipment.

On January 9th it was noted that the patient slept continuously and was unable to speak when awakened. Lumbar puncture: fluid under pressure less than before; 15 to 20 c.cm. withdrawn and 10 c.cm. saline solution containing 10 grains urotropin in solution injected. The patient collapsed with respiratory failure. Ether was injected and artificial respiration performed for thirty minutes before respiration was restored. Urotropin gr. 10 was ordered thrice a day. The condition remained almost unchanged. On January 12th the cerebro-spinal fluid from lumbar puncture was almost clear; a minute deposit on centrifugalization. Stained films showed few pus cells present and no cocci.

On January 15th the lethargic condition was less pronounced; he was able to say "Yes," and recognized people when awake. The paralysis and incontinence had not improved. From this date the patient gradually sank, the bronchitis increased, and he died on January 29th, 1919. Permission for autopsy was refused.

CASE II.

Pte. J. M., aged 16 years, one month's service, was admitted to Fargo Military Hospital, Salisbury Plain, on October 27th, 1918. Temperature 103°, pulse 104, respirations 32. He complained of headache, pains in the abdomen and limbs, and frequent cough.

October 28th. Coarse râles at bases of both lungs. Symptoms of early consolidation at the right base. His condition on October 30th was unchanged, and 5 c.cm. polyvalent vaccine was given.

On November 10th he complained of pains in head and joints, and became very collapsed and pulseless. Hypodermic injection of strychnine (gr. 1/30) given. Vomited brown fluid. Marked retraction of head and rigidity of neck (*tache cérébrale*). Kernig's sign present; 0.5 c.cm. vaccine given. Ice-bag to head. There was slight improvement on November 12th. He was conscious, had no headache, and no vomiting. Kernig's sign still present. Rigidity of neck persisted; complained of intense headache.

November 15th. Sputum purulent; cough loose; moist râles all over both lungs. Headache less severe.

November 18th. Headache improving. Answers questions intelligently. Moist râles all over both lungs.

November 19th. Kernig's sign still present. Dullness at right base and left upper and lower lobes. On November 21st 10 c.cm. antistreptococcic serum were given.

December 3rd. He has periodic attacks of severe occipital headache, with occasional attacks of vomiting. Has become very emaciated. The temperature varies between 101° and 104°.

December 5th. Vomiting of "cerebral type." Persistent severe headache. "Cephalic cry." Knee-jerks sluggish. No ankle clonus.

January 2nd, 1919. Temperature 101°, pulse 108, respirations 24. Patient emaciated. Pupils dilated, reacting sluggishly to light. Head retractions. Complains of frequent headache. Slightly drowsy, but intelligent. Intense pains on moving neck. Incontinence of urine and faeces. Occasional "cephalic cry." Ophthalmoscopic examination: Pale disc; engorged vessels; pupils dilated sufficiently for examination. Calomel gr. ½ thrice a day was ordered.

January 3rd. Lumbar puncture; fluid under pressure; 20 c.cm. withdrawn and 10 c.cm. saline solution containing 10 gr. urotropin injected. The cerebro-spinal fluid was colourless. The fluid was examined on January 6th. It was clear, and contained a few polynuclear leucocytes, but no lymphocytes. Stained Gram and Leishman. A few minute cocci were seen, Gram-positive, generally extracellular, sometimes intracellular; no capsule observed; usually diplococcus but sometimes in short chains, 3 to 5 cocci. The patient improved after lumbar puncture. Temperature 99°, pulse 104, respirations 24. Headaches less frequent. Paralysis and incontinence as before. Appetite good.

January 9th. Lumbar puncture; fluid under pressure and milky; 10 c.cm. saline solution containing 10 gr. urotropin injected. Urotropin gr. 10 thrice a day was ordered. On January 12th he was better, and wanted to get up, had no headaches and less pain on moving the head. Paralysis and incontinence remained. Stained films from the cerebro-spinal fluid showed many pus cells and no cocci. On January 16th the condition was unchanged; but on January 21st he was very lethargic, inarticulate, and very emaciated. Incontinence of urine and faeces persisted, and he had difficulty in swallowing fluids.

February 3rd. Died. Permission for autopsy was refused.

The symptoms in both patients exhibited a remarkable similarity.

The persistent headache and head retraction suggested tuberculous meningitis, but there was no paralysis of cranial nerves, and the differential blood counts showed no lymphocytosis. One common symptom was the widely dilated pupils, at first reacting sluggishly to light, but later there was no sign of contraction, even during examination of the fundi. The appearance of the fundi in both cases was remarkable; instead of the usual signs of the onset of optic neuritis the discs in both were somewhat pale, with clearly defined edges and marked congestion of the retinal veins. The patients, when not suffering from severe headache, were so lethargic that they hardly seemed conscious that the fundus was being examined, and on one occasion Pte. M. was found to be soundly asleep at the conclusion of the examination.

Pte. L. showed, in the earlier stages of the disease, more pronounced symptoms of cerebral irritation than Pte. M. He lay curled up on his left side with his head beneath the bedclothes, but in the later stages both lay on their backs, sleeping quietly. At no time was stertorous breathing observed in either case, nor did either patient suffer from convulsions. Paraplegia and incontinence of urine and faeces supervened at an early stage in both cases and persisted until death.

Lumbar puncture gave temporary relief from headache in both cases, but, as already noted, Pte. L. had respiratory failure on one occasion after removal of 15 to 20 c.cm. of fluid and injection of 10 c.cm. normal saline solution containing 10 grains urotropin. This treatment was tried as a last resort in the hope that it would destroy any infective organism. The fact that urotropin is inert in neutral or alkaline media makes it improbable that it would have any action on micro-organisms suspended in the cerebro-spinal fluid.

The onset of encephalitis lethargica in two typical cases of influenza suggests that the minute Gram-positive coccus isolated by Captain J. A. Wilson in cases of influenza and the apparently identical organism found by one of us (J. R. C.) in both of these cases, is the probable cause of encephalitis lethargica, as well as of the other diseases enumerated in the preliminary report. Subsequent lumbar punctures showed no trace of this coccus, or the cerebro-spinal fluid would have been sent to a larger laboratory for more detailed investigation.

It is recognized that in the absence of *post-mortem* observations and of any result from the attempts to obtain cultures of the coccus this report is incomplete, but the unusual clinical symptoms which appear to differentiate this disease from various forms of meningitis and from other types of encephalitis may assist in the diagnosis of other cases.

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[1] Von Economo, C.: *Die Encephalitis Lethargica*. Leipzig: Franz Deuticke, 1918. [2] BRITISH MEDICAL JOURNAL, February 1st, 1919, p. 127.

HYPNOSIS, SUGGESTION, AND DISSOCIATION.

BY

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THERE is an overwhelming consensus of opinion at the present day that the one satisfactory method of treating the various forms of functional nervous disorder is that of mental analysis and re-education. The physician endeavours to unravel the tangled emotional skein of the patient's past life, as well as the emotional circumstances which ushered in the disease in its manifest form. He reveals mental conflicts and misunderstandings of the past, and mal-adaptations to the present, which he then helps the patient to correct and to solve. He demonstrates the causal connexion of these mental antecedents with the physical or mental symptoms from which the patient is suffering. He thus helps the patient to understand

himself, practically as well as theoretically. When this understanding is complete and is acted upon by the patient, the latter is cured.

To sum up this method, I would suggest the term "autognosis," or self-knowledge. It embraces the two conceptions of analysis and re-education, and is free from the implications which the term psycho-analysis carries at the present day.

The question then arises whether the old-time methods of suggestion and hypnosis can find any place within the autognostic method. The principal use to which hypnosis was put before the war was as a means of reinforcing suggestion. Having hypnotized the patient, the physician proceeded to suggest away his various functional symptoms, and, to make doubly sure, often gave post-hypnotic suggestions to produce other general and specific effects. This method is undesirable for several reasons. In the first place, it treats the symptoms and not the cause. The same or other symptoms may therefore appear later on. Secondly, the patient is passive and abnormally suggestible. This increased suggestibility persists after the treatment, and is a source of mental weakness to the patient. Thirdly, repeated hypnosis, which is necessary in the more severe cases, tends to produce automatism and somnambulism. If the hypnosis is so deep that the patient loses touch with his waking consciousness and awakes as from a dream, these defects are serious and are only to be accepted as a choice between two evils—for example, in cases of alcoholism of long standing, or in other drug habits that have resisted all ordinary methods of treatment. In light hypnosis, where the patient has reached the arbitrarily defined stage at which he is unable to open his eyes when the operator tells him that he cannot, but is otherwise fully conscious of his surroundings, the drawbacks are correspondingly less.

But hypnosis can be used with a different purpose from that of reinforcing suggestion. All the severe cases of "shell shock" of the hysterical type (that is, showing functional disturbance, or loss, of sensory or motor powers) which I saw near the firing line in France suffered from loss of memory. I used light hypnosis to clear up this amnesia, and, as might be expected, I invariably succeeded. At first I used the method in the ordinary way, as an aid to the employment of suggestion, and suggested away the various other symptoms—mutism, paralysis, contracture, tremor, etc. But I soon discovered that if, after hypnotizing the patient, I suggested the recall of the lost memories with hallucinatory vividness, and reinstated the accompanying emotion of fear as an actual present experience, the voice returned of itself and the paralysis, etc., disappeared or diminished, without any suggestions directed towards these symptoms. The extent to which the symptoms disappeared varied in proportion with the extent to which I succeeded in reinstating the original emotional experience.

To illustrate by an example:

A patient, Pte. J. A., aged 41 years, was admitted to my neurological wards on the Somme suffering from deafness, mutism, and right-sided paralysis. His right arm was held stiffly across the chest, and he walked with the right leg stiff and the right foot turned outwards. There was also slight paralysis of the right side of the face. The tendon reflexes were exaggerated, but the plantar reflex was flexor and there was no ankle clonus. The abdominal reflexes were present, and equal on the two sides. The tongue was steady and protruded in the middle line.

The patient's history was as follows: He was partially buried by a bomb that went over his left shoulder and burst just behind him, causing him to lose all control of himself. He was then sent to a field ambulance, where he remained for four days and then returned to duty. On arrival at his unit he was noticed to be still tremulous, and was sent to see his regimental medical officer. Just as he reached the aid post a shell exploded near him and rendered him unconscious. On regaining consciousness he could neither hear, speak, nor walk. It should be added that, about six weeks before this, he had received a blow on the right arm from another man's shovel while trench digging. Since then his right arm had been tremulous whenever he was under shell fire.

I got the patient to lie down on a couch, and then showed him written instructions to close his eyes and think of sleep. He was instructed to relax all his muscles, breathe slowly and deeply, and think only of sleep. After a few seconds his breathing and facial expression showed me that he was asleep. I then made a sudden loud noise by banging two books together. His eyelids flickered and I found that he could hear.

I sent him to sleep again, and gave him the suggestion that the moment I put my hand on his forehead he would again feel the explosion of the shell which knocked him down near the aid post, and would seem to be going through the same experience again, exactly as it happened. The moment my hand touched his forehead he became very tremulous, breathed rapidly, and then shouted out: "Feeny, Feeny, kill them! . . . Feeny, Feeny, where are you? It's getting too hot here. I can't put up with it any longer. . . . Feeny, come here and get me out, I can't move my legs. I can't stand up. [Very rapid breathing.] I can't walk to the dug-out. Take hold of my arms, then I shall manage to get along. . . . I don't want to lie on that wire bed. I want to get out of this. We have had everything from a rifle bullet to a Jack Johnson over here to-day, and three parts of us are knocked out." While the patient was talking like this, his right arm and leg showed signs of movement. Before waking him I reminded him where he was, who was speaking to him, and the principal facts about his admission to hospital, thus reassociating his hypnotic dream with his present experience. I also told him that on wakening he would remember everything that he had just been going through. I then woke him up, and found that he could speak (although with a stammer), and could walk about normally. His right arm was still tremulous, and showed marked extensor paralysis.

Some days later I again sent him to sleep, and suggested that he would again live through his experience of being hit on the right arm by his comrade's shovel. He showed signs of pain, seized hold of his right upper arm with his left hand, writhed, and shouted "Oh my arm! . . . put it in my pocket." He then put his hand in his pocket. His hand was trembling. Thereupon I sent him more deeply to sleep. He then withdrew his hand from his pocket; it was quite steady.

In the case of this patient, then, the revival of memories of his two accidents, in a state of light hypnosis, with such vividness that he again felt the same emotions and seemed to be living again through the actual experiences, restored his voice and to some extent the motor power in his right arm and leg, and abolished the tremor of his right arm. All this occurred without the use of specific suggestions. But I had to help myself out later on with specific suggestions, as the case was more than usually difficult, nor could I keep him long enough to complete his cure.

During a period of sixteen months 121 cases of mutism passed through my neurological wards. Every one of them spoke when made to live again through their terrifying experiences. Some of them stammered, but these were a small minority. I did not need to give a specific suggestion that they would be able to speak. Cardio-vascular and secretory changes (tachycardia, hyperidrosis, etc.), dependent upon disturbance of the sympathetic nervous system, showed alteration under the same method of treatment. Curiously enough, paralysis of the voluntary muscles (apart from those concerned with the voice) diminished less readily than other symptoms. On the other hand, voluntary paralysis cleared up, sometimes quickly, sometimes slowly, under the influence of suggestion and persuasion, without the need of hypnosis.

These are facts. What conclusion can be drawn from them? It seems to me that we have a twofold dissociation in these cases. In the first place the shock of the shell explosion has produced a dissociation from the patient's personal consciousness of certain psycho-physical functions together with the memories linked with them immediately after the shock. But a second dissociation has also occurred, namely, that between the psychical and physical counterparts of the emotional reaction of fear. The physical counterpart then persists instead of being evanescent. The first dissociation has to do with the central nervous system, the second has to do with the sympathetic. Revival of emotion with hallucinatory vividness soon after the original shock, abolishes the second dissociation as well as the first, and so brings the physical manifestation of the emotion again under the sway of the conscious personality.

In cases seen in England and Scotland I found that lost memories were not so easily recalled, and that the reinstatement of emotion with hallucinatory vividness was very difficult to effect. However, in the few cases in which this did occur, the symptoms showed definite and sudden improvement. Chronic cases pass through a period of later mental development, in which different mental processes, memories and motives, recent and remote, interact and produce the well-known fixation of symptoms. We are thus brought back to the method of autognosis, in which memories are revived, in reverse order, by patient questioning and heart-to-heart talks. But it is the experience acquired in the field, with early and what I would call relatively "pure" cases, that

enables us to understand the therapeutic value of the revival of memories; and in light hypnosis we have a helpful method, if judiciously and sparingly used, to speed up the process or make it sufficiently complete. It is only in a small minority of the cases that this is needed or advisable.

TRANSVENOUS ANEURYSMORRHAPHY.

DESCRIPTION OF THE OPERATION.

BY

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I WISH to draw attention to an operative procedure which I have employed in the treatment of aneurysmal varix with most gratifying results, and which I have termed "transvenous aneurysmorrhaphy." It appears to meet the needs of a certain number of cases in an admirable manner.

I will first give an account of the case, which presents some points of peculiar interest, and will then offer some observations in regard to the operation itself.

CASE.

Pte. H. M., aged 22, was wounded in the right thigh by a rifle bullet on October 1st, 1916. On October 10th he came under the care of Captain P. Cheal, R.A.M.C., who found a small healed entrance wound on the antero-internal aspect of the thigh 4 in. above the knee-joint, with an exit wound at the same level on the posterior surface not quite healed. Considerable persistent swelling developed in the leg and foot, and was considered to be due to venous thrombosis. There were no signs of aneurysm. On January 5th, 1917, massage was instituted, after which a very marked vibratory thrill was observed for the first time in the neighbourhood of the wound. On January 6th I saw the case in consultation with Captain Cheal. The foot and leg were dusky and showed slight general oedema, and there was definite dilatation of the superficial veins from the knee downwards. In the upper part of the popliteal space there was slight swelling, with systolic pulsation, and other signs of arterio-venous aneurysm were present. There was faint pulsation in the anterior and posterior tibial arteries. I regarded the case as one of varicose aneurysm, and advised operation.

Description of Operation.

The operation was performed on January 15th, 1917. The popliteal vessels were exposed in the upper part of their course where the artery and vein were firmly adherent to one another without any intervening sac. Here the vein was greatly dilated and the artery below was considerably smaller than usual. When freeing the side of the vein remote from its connexion with the artery a saccular venous aneurysm was exposed (see Fig. 1) and was removed, disclosing the arterio-venous stoma through the lumen of the vein. It was of elongated elliptical form, ½ in. in length, and lying in the long axis of the vessel. The opening in the vein was enlarged very slightly upwards and downwards, and through it the aneurysmal opening was sutured (see Fig. 2) with fine silk sterilized in liquid paraffin. The vein was then closed in a similar manner. On removal of the tourniquet there was no bleeding and the circulation through the vessels seemed perfect. Operation was completed by suture of the fascial tissues and the skin.

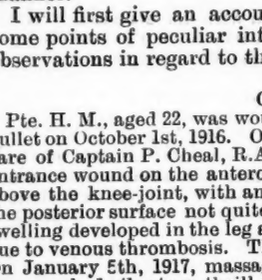

FIG. 1.—Aneurysmal varix of popliteal vessels, with a sacculated venous aneurysm on the opposite wall of the vein.

After operation good pulsation was felt in the dorsalis pedis and posterior tibial arteries. On the following day there was no trace of oedema in the limb, the colour was normal, and the dilatation of the superficial veins had disappeared. Healing was uneventful, the circulation remained good, and the patient was allowed to walk four weeks after operation. He was kept under observation for two months longer and was then discharged to light duty, the circulation being normal.

It is remarkable that until massage was instituted, three months after he was wounded, the patient exhibited no signs of arterio-venous aneurysm, although there were evidences of venous obstruction present from the beginning. I have previously[1] drawn attention to the rapid development of traumatic aneurysm following massage in certain cases of gunshot injuries, and it would appear that massage was the exciting cause here also, though naturally the vascular injury dated from the time of the wound, and it is probable that in the absence of massage active movements would have produced the same result. A reasonable explanation of the signs previously present is that the arterio-venous opening and the lumen of the vein were occluded by a clot which was disturbed by massage, but in that case it is difficult to understand why no evidences of embolism appeared, and at operation the lumen of the vein appeared perfectly smooth and normal. Consequently I find it hard to account for the train of events in this case. Another point of interest is the presence of a distinct venous aneurysm which accounted for the swelling and pulsation at the upper end of the popliteal space, and led to the diagnosis of varicose aneurysm rather than of aneurysmal varix.

A few words are necessary in regard to the technique of this operative procedure:

Apart from the necessity for rigid asepsis, scrupulous care must be exercised to avoid injury to the delicate intima of the vein. Consequently any blood which may obscure the view on opening the vessel must be washed away by gentle irrigation with saline solution, which is then carefully mopped up by a gauze swab or aspirated by a syringe. On no account must a swab be introduced into the vein for the purpose of *wiping* off blood; such a measure will favour subsequent venous thrombosis. The vessel wall should be smeared with sterilized vaseline, as recommended by Carrel.

The method of introducing the suture to close the arterio-venous communication is important: The needle is first passed through a small portion of the fibrous tissue which binds the vessels together at one end of the communication, on its external aspect (that is, entirely outside the vessels and between the two), and does not penetrate the intima of either—it thus resembles the commencement of the outer row of sutures in a gastro-jejunostomy. This stitch is immediately tied and the needle is then passed obliquely from without inwards, emerging on the inner surface of the vein close up to the extremity of the stoma (see Fig. 2). The extreme edges of this are then brought together by fine continuous sutures through intima and media until the opposite end

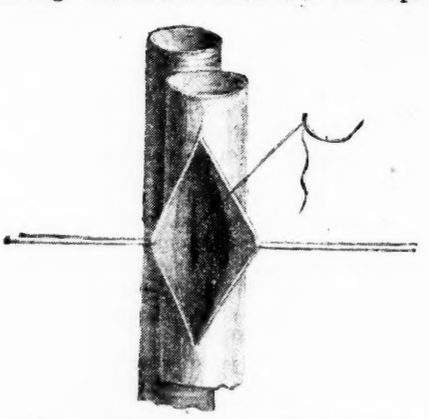

FIG. 2.—The venous aneurysm has been removed and the opening in the vein slightly enlarged, its edges being retracted by fine traction stitches. The arterio-venous stoma is being closed by a fine continuous suture. Note that no knot appears on the interior of the vessels (see text). In practice the stitches do not lie so close together as figured, and when drawn taut they do not present so much on the surface.

is reached, when the needle is again passed out from the lumen of the vein obliquely through its wall and the overlying tissue which binds it to the artery, so as to emerge between the two, when it is secured in a similar manner to the other end. Thus it will be seen that there is no knot projecting in the lumen of either vessel, and if the stitches are placed accurately and drawn taut throughout they do not present in the lumen of either vessel any more than in the case of ordinary through-and-through stitches which produce eversion of the edges in vascular suture. The closure of the incision in the vein presents no difficulty, being effected by the ordinary method advocated by Carrel.

While many cases of aneurysmal varix cause little or no inconvenience to the patient and do not require operation, others demand treatment by reason of circulatory disturbances. In some of these, when conservative and reconstructive measures are desirable, the procedure I

have described presents certain clear advantages over the usual operation, which consists in division of the junction between artery and vein followed by suture of each. The dissection and freeing of the anastomosis from the surrounding parts is sometimes very difficult and tedious, while it involves risk of injury to the vessels themselves and to neighbouring structures—for example, nerves—which may be adherent. These disadvantages are obviated by the transvenous operation, which thus offers the same facilities as does the transsaccular operation in cases of simple traumatic aneurysms and varicose aneurysms, and which I have previously emphasized.[2] I may say that since my former communication my further experience in the two latter types of cases fully justifies the claims I made for the transsaccular route. I have adopted it in every case where it was feasible, and it has invariably been successful.

While the case I have cited was an ideal one for transvenous aneurysmorrhaphy, in view of the presence of the venous aneurysmal sac, I do not advocate its adoption in all instances. Each case should be considered carefully when the local conditions are exposed at operation, and a decision should then be taken by the surgeon.

I desire to express my indebtedness to my former colleague, Mr. Harold Squire, for the admirable drawings of this case, and to Captain P. Cheal for his assistance at the operation and his after-care of the patient.

REFERENCES.

[1] BRITISH MEDICAL JOURNAL, December 9th, 1916. [2] Ibid.

SOME OBSERVATIONS ON ABDOMINAL WAR SURGERY.

BY ECHLIN S. MOLYNEUX,

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THREE qualifications are essential to the surgeon who undertakes the treatment of wounds of the abdomen.

The first is speed in operating. He should not spend more than half to one hour over the operation. This will be greatly facilitated by making a liberal incision, which may, if necessary, extend from the ensiform process to the symphysis pubis; large incisions cause practically no shock and heal well. The second qualification is gentleness. The more gentle the surgeon's manipulations the less the shock, and this again is aided by a liberal incision. The third is good judgement. During a push it is very important for the surgeon to be able to judge whether a given case is likely or not to recover if he decides to operate; and time that might be devoted to saving other lives may be wasted in operating on an abdominal case that is hopeless from the first.

It is generally said that a patient who is alive thirty-six hours after a wound of the abdomen, is better left alone; a small percentage of such patients recover. My experience is that very few patients with injuries of the hollow viscera of more than twenty-four hours' standing are benefited by operation. If the lacerations are severe he usually already has diffuse peritonitis and operation does no good. If they are slight, they may already be shut off by adhesions, and the patient has a chance of recovering, which will be diminished by having the adhesions pulled asunder.

Indications for Operation.

The most important guide to a patient's condition is the pulse rate and blood pressure. If the pulse rate is over 120 chances of recovery are very small, but not always hopeless if a speedy operation is performed. To quote two instances:

CASE I.

An American had a shell wound over the stomach. The foreign body was localized 2 in. deep to the site of the injury. It was thought that haemorrhage was the chief trouble and not injury to many viscera. On operation the foreign body was found in the transverse mesocolon which was much torn, no hollow viscera were injured, but a large vessel was bleeding vigorously. The vessel was secured and the wounds sewn up; 300 c.cm. of 6 per cent. gum solution was injected intravenously, and the man made an uninterrupted recovery.

CASE II.

A man had a penetrating shell wound of the left buttock, and also a shell wound of the left arm, with fracture of the humerus, a shell wound of the left leg complicated by fracture of the fibula, and a wound of the right arm.

After resuscitation his pulse was 138; he was warmed up further in the theatre and given hot drinks, and improved somewhat, but was still in a very feeble condition. It was decided to operate. The wounds were excised, the fractures put up, and the abdomen opened, while assistants adjusted the splints. One perforation of the large bowel and eight perforations of the small intestine were sutured, and the blood and extravasated faeces swabbed out. A rubber dam drain was left in Douglas's pouch. He was then infused with 1,000 c.cm. of gum solution. This was followed by a rigor. He vomited on and off for two days, but from that time onwards steadily improved, and was evacuated about eighteen days later, eating his food well and in excellent condition.

A very useful guide is the effect of moving a patient from the resuscitation ward to the theatre. He may have a pulse of 110 in the resuscitation ward, but by the time he has been carried the few yards to the theatre the pulse rate may have increased to about 130, and be difficult to count. This is a strong contraindication to operation. If he cannot stand being moved to the theatre, he will not survive an operation.

My practice has been as follows:

Any patient who is in a fit condition, and who, from the site of the wound, the physical signs, and the localization by *x* rays of the foreign body, probably has a wound of a hollow viscus, or a large foreign body in the liver or spleen, or shows signs of much haemorrhage, is after being sufficiently resuscitated, when this is necessary, taken to the theatre.

He is then anaesthetized. I have found Coxeter's gas and oxygen apparatus (invented by Boyle) the best—an injection of morphine and atropine having been given previously. It is usually necessary to let the gas and oxygen flow through the ether bottle that is provided, when the time for sewing up the parietes draws near.

All the entry and exit wounds are first thoroughly excised, and flavine packs introduced and left in. In most cases it is found best to make a separate incision to explore the abdomen. A para-medial is the most generally useful incision, as it is easier to make a complete examination through such an incision. In a wound of the side a para-costal incision is often suitable if the foreign body is localized near the entrance wound, and therefore it is not necessary to examine the whole of the abdominal contents. In the majority of cases the foreign body, from its position and the distance it has traversed, may have damaged many organs, and it will therefore be assumed that a para-medial incision has been made. I then make a systematic examination of the whole of the stomach and intestines, if necessary exploring the posterior surface of the stomach through the lesser sac and taking care that as little of the intestine as possible lies outside the abdomen at one time. This need not take long if a liberal incision is employed. A piece of gauze is clamped to each perforation to mark it. Then the solid viscera are inspected and the foreign body looked for and removed.

The next step is to suture all the perforations. A single continuous suture which inverts the peritoneum is all that is necessary to close a perforation. If a loop of intestine is in rags it may be necessary to resect it, and in this event an end-to-end union is best. But the mortality from shock is very great in these war resections, and it is better to sew up many perforations and tears rather than resect bowel; in fact, this latter procedure should be avoided if it is in any way possible to suture the wounds and preserve a sufficient blood supply. The large intestine will stand more traumatism to its blood supply than the small. Either fine catgut or linen thread may be used for suturing the intestine, but preferably the former. For the bladder, catgut should always be employed. For haemorrhage from the liver, spleen, or kidney, mattress sutures of catgut may be tried, but gauze packing, left in, will usually be found to control haemmorrhage best. Relatively seldom is it necessary to remove the kidney or the spleen except for secondary haemorrhage which is usually due to sepsis. Wounds of the pancreas require a gauze pack to stop haemorrhage and prevent the pancreatic juice running over and digesting the abdominal contents. But pancreatic wounds are very fatal owing to concurrent damage to contiguous important structures. If there is a large foreign body in the liver it should be removed, if feasible, as it sometimes leads to dangerous hepatitis.

The blood and all faecal soiling is now sponged out with gauze wrung out in hot saline. If there is much faecal contamination a drain is left in Douglas's pouch. A rubber dam generally suffices, and drainage is often considerable for forty-eight hours, after which the drain is removed. Drainage is specially necessary after wounds of the colon and rectum. If the colon is greatly damaged colostomy of the damaged portion should be performed. Lacerations of the diaphragm, unless minute, should always be carefully sutured. The abdomen is closed in layers.

In wounds of the right chest, with a large foreign body penetrating into the liver, I have found the following technique useful. After performing thoracotomy and dealing with the lung, the foreign body is removed, if possible through the hole in the diaphragm, which is enlarged if necessary. The diaphragm is then sewn to the costal pleura, as in the operation for subdiaphragmatic abscess. A gauze drain is left in. By this method the risk of any septic discharges from the liver wound running down into the abdomen is avoided; they drain straight to the outside of the chest, through the diaphragm. The pleural cavity is of course closed off. In wounds of the left side of the chest involving the spleen and stomach, in which the foreign body is localized near the diaphragm, when thoracotomy is being performed the rent in the diaphragm can often be enlarged, the foreign body removed, and the wound of the stomach and spleen dealt with. The diaphragm is subsequently sewn up and the chest closed.

If a wound of the bladder is small but leakage of urine has occurred into the abdomen, it is not always easy to find the wound. In one case I was unable to do so, and performed suprapubic cystotomy; a tube was left in for a few days, by which time the original wound had healed; the patient made a good recovery. A foreign body should always be removed if inside the bladder. In wounds of the buttock or back, penetrating the abdomen, the back wounds should always be dealt with first, as patients suffer considerable shock from being turned over late in the operation.

After-Treatment.

It is important to keep the patient warm. Fowler's position is adopted after about six hours, and the patient is only gradually raised if there is much shock. Saline and brandy are given by the rectum. I allow plenty of fluid by the mouth as soon as the patient wishes it; if perforations have been properly sewn up it will do no harm, and if they have not they are sure to leak anyhow when the peristaltic power returns. Moreover, if the stomach be wounded it is easily made watertight, as the walls are thick. These patients are always thirsty, and need fluids badly. For flatulence pituitary extract, injected intramuscularly, is often useful.

On the second or third day it is usual to administer an enema after an injection of pituitrin. I have often noticed considerable shock after these enemata, though they have been carefully given, and have seen two cases die of shock after an enema. One of these was a patient with a large tear of the hepatic flexure of the colon that had been sutured. Three days later he was doing well, and his pulse was only 100. He was given an enema, and collapsed immediately. At the *post-mortem* examination the wound of the bowel was found quite sound, and nothing abnormal was seen. Miss Wade—a very observant sister who nursed many of these abdominal cases—tried different enemata and aperients under my direction; she always noticed some degree of shock after an enema, but found that castor oil was more satisfactory than anything else; after its administration shock was negligible. Mention is made of this as it may be worth further investigation, and apply also in cases of severe civil abdominal operations.

Results.

I kept notes of 34 consecutive cases during the final campaign of 1918. I retained them in the casualty clearing station till convalescent; 23 of these made a good recovery, 11 died—a recovery rate of 67 per cent. Six of this series had wounds of the chest penetrating the diaphragm into the abdomen.

By operating on war wounds of the abdomen some lessons are learnt that should prove of great help in civil abdominal surgery. The foremost of these is how speedily an abdominal operation can be performed without roughness and without undue sacrifice of thoroughness; the shock of a severe operation is thereby greatly lessened. Gas and oxygen is an excellent anaesthetic for a civil abdominal operation of an urgent and critical character. It is now common to examine the whole of the abdominal contents systematically in a short space of time; lastly, a single layer of continuous suturing is ample for most cases requiring resection of bowel or anastomosis.

A satisfactory feature of these abdominal wounds is that if a patient recovers from the immediate injury he usually becomes a strong healthy man again and an asset to the community, whereas many wounds of the extremities —for example, fractured femur—nearly always leave some permanent disability.

A SUGGESTION FOR A HEALTH CENSUS.

BY

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IN a paper published recently in the *Medical Officer*[1] I pleaded for a health census. The subject is of such importance to the community that I wish to draw attention briefly to it in your widely circulated JOURNAL. The points made are: (1) That the Ministry of Health is essential to attain the maximum of efficiency and for the co-ordination of the different authorities dealing with the subject; and (2) that prevention of illness takes the first place in any national scheme, and of next importance to this comes the protection of the community from communicable disease. It is now fully realized that any measures, however far-reaching, will be of little use unless better houses are provided for the poorer classes.

The waste of man and woman power from ill health is an economic problem of the first importance to the country, and money wisely expended on health, particularly on the prevention of disease, will prove a sound investment for the nation.

Medical examination for the army has proved the enormous number of unfit in this country. Medical examination of school children had already drawn serious attention to the large percentage of defective children, and had also made evident that many of the conditions by early discovery and efficient treatment could be prevented from irretrievably ruining the child's health and future.

It seems to me to be the duty of medical officers of health to indicate what may be considered the only method likely to achieve these invaluable ends—the prevention or the early treatment of disease. The advantages of this are likely to appeal to an intelligent community, though compulsory measures for any ordinary purpose are rightly resented by the average Briton. If active measures are to be taken, now is the time, for the existing organizations with trained doctors and suitable buildings can readily be turned to a good purpose. It is suggested that examination of every man, woman, and child under sixty years of age should be made periodically, and that each person examined should be supplied with a "health record card," on which would be entered all particulars of the physical condition found on such examination, this card to be produced at all subsequent examinations and necessary corrections and additions made upon it.

Four examples of well known diseases are offered as illustrations of the importance of such a scheme.

1. *Cancer.*—Every decade shows an increase of the progress of this dreadful disease. Though the cause of it has not yet been discovered, many conditions well known to surgeons predispose to its development. By removing these predisposing causes cancer can be prevented. In the public mind pain is so closely associated with the name of cancer that an apparently insignificant swelling, or a small painless sore, or a trifling haemorrhage from one of the internal organs, is apt to be ignored. Yet each of us knows that any of these may be the first evidences of cancer. Surgeons are agreed that 75 per cent. of cases now seen by them have poor chance of cure from even the most radical operations, but that in the great majority of patients there was a time when a suitable operation could have effected a good result and permanent cure.

2. *Arterio-sclerosis* claims an increasing number of victims at the most efficient and productive period of

their lives. Its early detection requires skilled examination and its progress can then be arrested.

3. *Tuberculosis.*—Many of the predisposing causes of tuberculosis are known, and their recognition may be the means of preventing its development. It is probably more widely spread than any other disease, and unfortunately the tubercle bacillus is possessed of such resistance that it can continue to exist in almost any environment. The conclusion following this knowledge is that any attempt to stamp out tuberculosis is for the present doomed to failure. If recognized in its early stages and promptly treated, we know it is not the deadly disease public opinion has supposed. But, in spite of notification and sanatorium treatment, the results have not been what they should, because it is exceptional for cases to be discovered in their early stages. As proof of this, our experience may be quoted. The best results in Cumberland have followed the discovery of early cases during examination of school children or the examination of contacts of notified cases.

4. *Syphilis.*—The costly arrangements now being inaugurated for the treatment of this deadly disorder, though beneficial to the affected individual will do little to stamp out the disease, but this could be done in two years if medical knowledge could be applied on scientific lines. The organism believed to be the cause of syphilis, unlike that of tubercle, is delicate and easily destroyed. It dies after a few hours of exposure to the air, and can only be propagated by intimate personal contact. When introduced into the human body it invades all the tissues, and untreated is likely to remain actively infective for years. Unless treatment is made compulsory every doctor knows that it is going to be a failure. The diagnosis of syphilis by clinical examination, the microscope, and blood tests is relatively easy, so that such a health census as I have suggested would reveal the syphilitics in any community. The only scientific method of disease prevention ever introduced into this country was Mr. Walter Long's Rabies Order of 1897, and this magnificent bit of far-seeing statesmanship stamped hydrophobia out of Britain. In the interests of the community and of themselves infective syphilitic persons should be segregated in healthy surroundings till the risks of spreading infection and of leaving the disease uncured have gone. A small extension of the work done by port sanitary authorities would ensure that new cases were not introduced from overseas.

If the Prime Minister's wishes are to be realized they demand radical improvement in the methods so far recognized and employed for the prevention and treatment of disease.

REFERENCE.

[1] *Medical Officer*, April 12th and 19th.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

A NOTE ON THE TREATMENT OF MALARIA.

A CONSIDERABLE number of men who have contracted malaria abroad, and who have been demobilized, are being admitted to the malaria section of the 4th London General Hospital with relapses. In most cases they give a history of having been treated by civil practitioners before admission to hospital, but that the treatment has failed to stop the attacks of fever. This is apparently due to a dread of giving adequate doses of quinine; and I think it might be of advantage to point out that we have found here that quinine sulphate in solution, given in doses of 10 grains three times a day, never fails to cut short the attacks and cause disappearance of the parasites from the peripheral blood in a few days, whilst no serious ill effects have followed such doses. If each relapse were treated promptly with this amount of quinine daily for a week, it would mean a considerable saving in lost time, and the general health of the patients would not deteriorate as it does under repeated attacks of fever. After the week's dosage of 30 grains of quinine daily, a dose of 10 grains of quinine should be given regularly once a day to prevent relapses, as in the Malaria Concentration Centres in England (*Lancet*, May 10th, 1919, pp. 780–781). My thanks are due to Colonel Sir Ronald Ross, Consultant in Malaria, and Colonel Smart, Officer Commanding 4th London General Hospital, for permission to publish this note.

T. H. JAMIESON, M.D., M.R.C.P.Edin.,
D.T.M.H., D.P.H.,
M.O. in Charge Malaria Section, 4th London General Hospital.

A SUDDEN DEATH UNDER AN ANAESTHETIC.

ON May 20th I gave an anaesthetic to a stout well-grown girl of 16 (she looked quite 20) for enucleation of tonsils by dissection. Anaesthesia was induced without difficulty by C_2E_3 on a domette mask. The mouth was then opened by gag and the vapour of Billroth's mixture (C_3E_1) blown in through a tube from a Junker apparatus. While the first tonsil was being enucleated, which was done with some difficulty, she gave signs of coming to, and I replaced the mask for a minute and gave a little more C_2E_3, then returning to the Junker apparatus and tube. The fauces were swabbed out, and there was no indication of blood in the air passages. When the second tonsil was on the point of removal the patient suddenly ceased to breathe, the pupils dilated, and the heart stopped beating. Artificial respiration was carried on for nearly two hours, air entering the chest quite freely, but there was never the slightest response. *Post mortem* a fairly large persistent thymus was found, and some enlarged abdominal glands; the left ventricle was uncontracted.

The persistent thymus probably affords an explanation, though a little understood one, of the sudden cardiac failure; but I ask for information on two points. (1) Is there special danger in the operation of enucleation of tonsils? Several deaths have been recorded. (2) Can it be that the necessarily light anaesthesia given by a Junker apparatus and tube when the mouth is widely open is a source of peril? Auricular fibrillation is said to occur with light chloroform anaesthesia.

Eastbourne. H. S. GABBETT, M.D.

Rebiews.

DR. JOHN FOTHERGILL.

THE appearance of *Dr. John Fothergill and his Friends*,[1] from the pen of Dr. HINGSTON FOX, will be welcomed by all those who are students of the eighteenth century. It is the fashion for some, quite unjustly, to sneer at that century as an age of artificiality and stagnation; yet during the greater part of that epoch the final blows were being struck which emancipated the human intellect, we may hope for ever, from the fetters of superstition and authority so-called. That age witnessed the fall of the obsolete edifice of feudalism, and saw the road traced out up which we have since travelled to the enjoyment of civil, intellectual, and religious freedom. In that century also were re-established the sound principles governing scientific inquiry at the present day, which, lying dormant since the close of the seventeenth century, suddenly burst forth with such power during the last thirty years of the century. With this book as an introduction it is pleasant to join the circle of representative Georgians who shared the friendship and hospitality of Dr. Fothergill, and who played a not inglorious part in the intellectual and social developments of the age in which they lived.

Dr. Hingston Fox, as we already knew, is quite at home in the eighteenth century. He prefers the silk stockings, the knee breeches, and the brocaded waistcoat to the doublet and the hose. He has made full use of his great knowledge of this period, and by inheritance and conviction he is ably equipped to describe the life and times of a man who was certainly the most prominent member of the Society of Friends in the eighteenth century. The result is notable for accuracy and wealth of research, and the book is written in a sober and correct style that would surely have earned the encomiums of the most precise of Fothergill's friends.

Whatever may be said of the general reputation of Fothergill as a figure in his age, the estimation of his exact position as a physician is a difficult problem. Like

[1] *Dr. John Fothergill and his Friends. Chapters in Eighteenth Century Life.* By R. Hingston Fox, M.D. Macmillan and Co., Ltd. (8vo, xxiv + 434. 21s. net.)

many other physicians who flourished in the eighteenth century, his name has been rendered famous not only by his skill in medicine, but also on account of his varied interests and his irreproachable character as a man. As a practitioner of medicine he was accorded a large share of public support; few indeed have been so successful. But of the two criteria by which the medical reputation of a physician is judged, his ability as a teacher and his medical writings, the former was never tested, and the latter are so scanty, and so evidently composed under pressure of other work, that they afford no true basis for an opinion. With his extensive practice, and the other demands upon his time, it is not to be wondered that Fothergill had little leisure for reflection and writing, and much of what has come down to us bears evidence of haste, and careless composition. He wrote entirely from the clinical standpoint, and out of the wealth of his unrivalled clinical experience. As Dr. Hingston Fox points out, his ability in presenting a picture of disease, as he knew it, was great, and it may be doubted if Heberden himself could have written anything better than Fothergill's account of "sore throat." Nor must he be blamed for confining himself to the clinical side of disease. At the time in which he lived the clinical features of disease were the only avenues to medical knowledge, for the sciences of physiology, chemistry, and even anatomy, had hardly begun to have an effect upon the study of morbid conditions. That came later through familiarity with the work of Haller, Morgagni, and Baillie. Still, within these limitations the writings of Fothergill possess considerable merit, not least on account of the total absence of blind adherence to "systemic" authority, and theories that had emanated from the metaphysics of the "schools." He studied the only book he knew—his own large clinical experience of disease.

Fothergill as a physician recalls to our mind two other great exponents of clinical medicine who lived in his time—Heberden and Sir George Baker—and the trio had much in common. They were all pure clinicians, they all enjoyed a large share of public patronage, they were all distinguished for public and private virtue, and they were never attached to the staffs of any London hospital. Their influence was great, and it was uniformly exerted for the good of the profession they adorned. Heberden, we think, stands high above the other two. In clinical ability he may justly claim to be the descendant of Sydenham in the direct line, and the prototype of Bright, Watson, and the other great clinicians of the nineteenth century. His *Commentaries* have established his reputation for all time, and in them we have evidence that the praise of his contemporaries was not exaggerated. The fame of Baker rests upon his great work in explaining the cause of plumbism in Devonshire, and his knowledge of Greek; while Fothergill, if he did not equal the other two in erudition and medical ability, had yet a wide sympathy with science, perhaps in advance of Heberden and Baker.

But an imperfect conception would be formed of the character of Fothergill if the medical side of his life only be considered. Here we think Dr. Hingston Fox has performed a signal service to history in devoting so much of his book to the activities of Fothergill as a botanist, an educationalist, and as a politician of the school of Burke and Fox. After reading what Dr. Fox has told us our admiration is increased for the man who, besides spending his day in arduous medical practice, could find time to care for a botanic garden of upwards of thirty acres, employing fifteen men, and catered for by collectors all over the world in Fothergill's pay. We always had a respect for Dr. William Pitcairn's garden at Islington, but his five acres pale into insignificance when compared with the magnificent expanse at Upton Park. Only a glance at the long list of plants and trees introduced into this country by Fothergill is needed to appreciate how much succeeding generations owe to him for making our country more beautiful. The formation of Ackworth School also claimed a large part of Fothergill's energies, and he found time to take an active part in the government of the Society to which he belonged. Dr. Fox writes with the skill of an expert concerning the history of the Society of Friends during the eighteenth century, and from his temperate account we are glad to learn that Fothergill's influence in the Society was always exerted in the direction of justice and toleration. With regard to the dispute with Leeds we are, however, unable to understand how Fothergill could expect justice in a matter concerning medical skill from a court composed of fifteen lay members of the Society. A description is given of the Friends' Meeting House in Gracechurch Street, and this is of peculiar interest, for we believe it was to this place of worship that Voltaire was taken by his Quaker friend during his stay in England; a full account of the visit will be found in his delightful *Letters on England*.

Few will associate Fothergill with those engaged in negotiations connected with the movement for American Independence, but Dr. Fox has explained with great ability the considerable part played by the physician to avert, or at any rate to soften, that unhappy event. As we might expect, Fothergill was on the side of Chatham, Burke, and Fox, and his attitude throughout is characterized by prudence and toleration.

Here we must take leave of this excellent book, in which Dr. Fox has performed a real service to medical history in this country. We leave it with a clearer perception of Fothergill's character than we had obtained from Lettsom or others who have essayed his portrait. Fothergill will not, perhaps, find a place in medicine beside Hunter, Heberden, Baillie, and Bright; he will rank below Prout, Wells, and Young in the realm of science, and his well of human sympathy may not have been so deep as that of John Howard and Wilberforce. But for all that he was endowed in a remarkable degree with all those qualities of heart and mind that make us respect and love him as a physician and a man. He was representative of all that was best in human nature in his century.

EMERGENCY SURGERY.

ANY general practitioner may be suddenly called upon to perform urgent surgical operations, and as his opportunities for practising surgery are few he is no doubt glad to have at his elbow a book of easy reference which will quickly tell him what he wants. Dr. JOHN W. SLUSS has supplied such a want in his book, *Emergency Surgery*.[2] As this is the fourth edition it is evidently popular with American general practitioners, for whom it was written. The new edition has been brought up to date in so far that the chapters on wound infections and those dealing with the surgery of war have been rewritten or revised. A great deal of information is packed into comparatively small space, and it can be reached readily through the index, which is fairly full. But the information is dealt out unequally. For example, immense detail is expended on the manipulative method of reducing the dislocation of the thumb where the head of the metacarpal is caught between the two portions of the short flexor and the glenoid ligament is interposed between the phalangeal base and the metacarpal head, but no description is given of the operation to be performed should manipulation fail. The account of the operations for herniotomy and radical cure of hernia is greatly over-illustrated, as indeed are those of many other of the surgical emergencies. To a few points exception must be taken. We cannot agree with the author in recommending that drainage tubes in empyema after resection of rib should be long, nor do we believe that the bony points of the elbow in any position of the joint form an equilateral triangle; and lastly, boric acid is not a constituent of Dakin's solution. Readers will observe many faults in the English composition and the use of words, and what is worse, wrongly figured references and proof reader's omissions. They will be consoled to find that the majority of the pictures are from well known books and compensate for textual delinquencies.

It cannot be said to be an easy business to write *A Textbook of First Aid and Emergency Treatment*[3] for the "untrained first-aid worker" and for the "advanced student." Dr. BURNHAM has essayed this task, and has accomplished it with considerable success. The text is clear and precise, and the very numerous pictures, mostly borrowed, are illustrative. The introductory chapter on anatomy and physiology is full enough to interest and not

[2] *Emergency Surgery*. By John W. Sluss, A.M., M.D., F.A.C.C., Associate Professor of Surgery, Indiana University School of Medicine, etc. London: William Heinemann. 1917. (Post 8vo, pp. xix + 848; 685 figures. 17s. 6d. net.)

[3] *A Textbook of First Aid and Emergency Treatment*. By A. C. Burnham, M.D., Medical Corps U.S.R., Instructor in Surgery in the Polyclinic Hospital, New York City, etc. Philadelphia and New York: Lea and Febiger. 1917. (Post 8vo, pp. 307; 160 figures, 2 plates. 2 dols.)

overload the student in beginning the study of first aid; the pictures are chosen from well-known textbooks of anatomy. Wounds and wound infection, bandaging, fractures, and dislocations, regional and general injuries, are thoroughly well represented as far as possible in non-technical phraseology, with insistence on observance of general principles to guide treatment. The book is nicely balanced and proportioned, and appears likely to lessen the dangers associated with the possession and application of small stores of knowledge. We would like to point out, however, that it is not right to say "the first symptoms of tetanus noted are convulsions beginning in the muscles of the jaw" (p. 164); all recent teaching in this disease draws attention to local muscular rigidity and spasm as the first sign to be watched for. Again, we think the author, in the anatomical chapter, should not employ the terms "bregma," "inion," "gnathion," etc., in describing the bony prominences of the skull, and should correct the statement that the spinal cord is "about the size of, or a little larger than, a lead pencil," or at least give the cross section measurements of the lead pencil. Apart from these minor faults the book is excellent of its kind.

LEONARDO DA VINCI AS AN ANATOMIST.

IN his study of Leonardo da Vinci as an anatomist, Dr. H. HOPSTOCK,[4] Prosector of Anatomy at the University of Christiania, has drawn on the Windsor manuscripts (*Fogli* A and B) which have been reproduced by Sabachnikoff and Piumati, and has utilized also the remaining 129 Windsor Leonardo manuscripts translated by Vangen, Fonahn, and Hopstock, and published by Dybwad as *Quaderni d'anatomia* I–IV. His comparison of the *Fogli* with the *Quaderni* shows that the former deal almost exclusively with anatomy and physiology. The dissections reveal Leonardo as a great and original anatomist, and his comparatively fluent and easy diction is, in Dr. Hopstock's opinion, proof that the *Fogli* were written in the anatomist's later years; the *Quaderni* show better the way in which Leonardo acquired his knowledge of anatomy. About one quarter of them deals with subjects other than anatomy and physiology; the style is in many cases obscure and heavy, and they probably represent the notes of his early anatomical and physiological studies.

Dr. Hopstock thinks that Leonardo started with some knowledge of anatomy derived from old sources, but that he soon struck out independently, developing his methods of research on original and scientific lines. His method of dissection, his opinion of different authors, his views on the arts of dissection, and the interesting sentiments he experienced while dissecting are analysed by Dr. Hopstock, who has come to the conclusion that Leonardo had more than a vague idea of the phenomena of the circulation of the blood, but admits that no clear account of it is given. Dr. Hopstock is of opinion that nobody had previously made so many dissections of the human body as Leonardo and that he was the first to describe the uterus as an organ with a single cavity. He was also the first to give a correct description of the skeleton and practically all the muscles of the human body. In his study of the blood vessels he was the first to practise the injection of a solidifying substance the better to trace them. No one before him had depicted the heart so well, and it was he who gave the names auricle and ventricle to its chambers. Dr. Hopstock, who reproduces many of Leonardo's drawings, sums up by saying that Leonardo, though a mediaeval artist, should be regarded as a modern biologist whose anatomical and physiological drawings belong to science rather than to art.

NOTES ON BOOKS.

THOSE in search of a practical and scientifically written book on British birds will welcome the appearance of the *Practical Handbook of British Birds*,[5] edited by Mr. H. F. WITHERBY. The price of each part is 4s., and as the whole work is to be completed in eighteen parts its cost may be considered moderate. To judge by the two sections now before us the work, when completed, will contain a vast amount of information carefully analysed and recorded; all birds on the British list are to be included, and both plates and text figures will be given in abundance. The plan of the work shows much originality, upon which the editor and his five collaborators are to be congratulated. The information is very systematically arranged, and a feature of novelty and particular value is a description of the sequence of plumages and moults, from the nestling to maturity and from season to season, of each bird. An account is given of the flight, notes, and song of each bird, and of its characteristic habits as observed in the field; the sections on the food of birds will help the reader to form his own opinion on the vexed question of which species are injurious and which are not.

The second edition of *Details of Military Medical Administration*,[6] by Colonel FORD, of the Medical Corps, U.S.A., is a massive and apparently exhaustive work on a subject now happily of less importance than it was a year ago. It contains twenty chapters and two appendices, and is full of detailed orders, instructions, forms, schedules, and the like, with constant reference, of course, to U.S.A. service regulations.

It is generally agreed that some reconstruction of our methods of regulating the traffic in drink is necessary. Since D.O.R.A. of 1915 is soon about to expire automatically, the old *ante bellum* licensing arrangements will come again into force unless Parliament takes action. The case for the State purchase of the liquor trade has been ably set out by Messrs. ROWNTREE and SHERWELL[7] in a pamphlet that well repays reading, and should find a wide circle of readers at the present critical time.

In the third number of the *Seale Hayne Neurological Studies*[8] Lieut.-Colonel A. F. HURST and his colleagues continue the record of their experiences in the diagnosis and treatment of war and other neuroses. Dr. Hurst contributes, with Dr. Symns, an important paper on the hysterical element which is to be found in many organic affections of the central nervous system. Other articles, no less important, on such phenomena as hysterical vomiting, disorders of micturition, ocular symptoms, aphonia and convulsions, written by his co-workers, complete the number. These studies make fascinating reading, and are of the greatest medical interest and importance. Every subscriber to the monographs will wish to pay a visit to Seale Hayne, and he will be amply repaid for his trouble by so doing. Medical men who are not as yet subscribers will become so at once if they make the journey and witness the remarkable work which is being done there by, and under the inspiration of, Dr. Hurst.

The cleverness of Mr. SOMERSET MAUGHAM'S last novel cannot be denied. It is somewhat fantastically named *The Moon and Sixpence*,[9] and the main outline of the story is so simple that the publisher is able to indicate it sufficiently in seven lines on the outside paper cover. The book is entertaining, and there are many witty passages—some of them not quite free from malice. Now and then the author carries realism a little too far to be agreeable, but his object is to show in crude colours the egotism of an artist savagely seeking to express his genius. We have the author's word for it, on p. 203, that the book is meant for "family" reading, but the context suggests that this may have been written with the tongue in the cheek. The old French doctor, Coutras, and one or two other characters are drawn with much sympathy. We do not know whether the digression about the strange career of Dr. Abraham, of St. Thomas's Hospital, is taken from life, but the author understands his business so well that he makes one think it has at least a foundation of fact. The introductory chapter with its make-believe bibliographical footnotes is very ably done, and whets the reader's appetite at once.

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[4] *Anatomen Leonardo.* By Dr. H. Hopstock. Christiania: Steen'ske Bogtrykkeri og Forlag. 1919. (Demy 8vo, pp. 85; illustrated.)

[5] *A Practical Handbook of British Birds.* Edited by H. F. Witherby, F.Z.S., M.B.O.U. Parts I and II. London: Witherby and Co. (Demy 8vo, pp. xvi + 64; 65–128; coloured plates and figures. In 18 parts. 4s. net per part.)

[6] *Details of Military Medical Administration.* By Joseph H. Ford, B.S., A.M., M.D., Colonel, Medical Corps, United States Army. Second, revised edition. Philadelphia: P. Blakiston's Son and Co. 1918. (Med. 8vo, pp. xiii + 816; 30 figures. 5 dollars.)

[7] *State Purchase of the Liquor Trade.* By Joseph Rowntree and Arthur Sherwell. London: G. Allen and Unwin, Ltd. 1919. (Demy 8vo, pp. 87. 1s. net.)

[8] *Seale Hayne Neurological Studies*, vol. i, No. 3. November, 1918. Edited by Lieut.-Colonel A. F. Hurst, R.A.M.C. London: H. Milford, Oxford University Press. 1918. (Roy. 8vo, pp. 56, illustrated. 3s. 6d.)

[9] *The Moon and Sixpence.* By W. S. Maugham. London: W. Heinemann. 1919. (Cr. 8vo, pp. 263. 7s. net.)

PORTRAIT OF SIR CLIFFORD ALLBUTT.

As announced a few weeks ago, Sir Clifford Allbutt has accepted an invitation to allow the profession to present to him a portrait of himself painted by an eminent artist. The Council of the British Medical Association has taken the initiative in the matter because Sir Clifford Allbutt has been President of the Association during the years of the war, and will preside over its Annual Meeting in Cambridge next year. The esteem due to Sir Clifford Allbutt's attainments and the warm affection inspired by his character are such that very many, both within and without the Association, will desire to share in this tribute to one whose career has reflected so much honour on medicine in England. This desire will not be limited to his many pupils, first in Leeds and afterwards in Cambridge, nor to the members of the Association, and subscriptions are invited from all members of the profession. The amount is limited to one guinea, and the Treasurer of the British Medical Association, 429, Strand, London, W.C.2, is prepared to receive subscriptions of one guinea or less.

The following is a further instalment of the list of subscribers; other subscriptions, received this week, will be acknowledged in an early issue.

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Colonel J. Smith (Clifton)
Dr. J. W. Smith (Ryton-on-Tyne)
Captain P. C. C. Smith, R.A.M.C. (Epsom)
Dr. T. Hanson Smith (Stockport)
Dr. R. W. I. Smith (Sheffield)
Professor W. R. Smith (London)
Dr. S. H. Snell (Christchurch)
Dr. Arthur de W. Snowden (Ringwood)
Dr. C. D. Somers, O.B.E. (Aldeburgh-on-Sea)
Dr. V. F. Soothill (Margate)
Dr. James G. Soutar (Cheltenham)
Dr. H. R. Spencer (London)
Dr. W. S. Sprent (Rossett)
Dr. Campbell Stark (Wanstead Park)
Dr. Lockhart E. W. Stephens, C.B.E. (Emsworth)
Colonel John Stewart, C.A.M.C. (London)
Dr. T. P. Stewart (Fife)
Dr. G. F. Still (London)
Dr. Stirling-Hamilton (Ingatestone)
Dr. W. A. Stokes (Birmingham)
Mr. J. L. Stretton (Kidderminster)
Dr. J. A. Struthers (Bootle)
Dr. F. H. Stuttaford (Plymouth)
Colonel James Swain, C.B. (Clifton)
Dr. E. H. Sweet (Uckfield)
Captain B. H. Swift, R.A.F. (London)
The Hon. Dr. Ella S. Synge (London)
Dr. J. G. Taylor (Chester)
Dr. R. Fr T ylor (Blackburn)
Dr. W. C. Taylor (Dundee)
Captain O. Teichman, M.C., D.S.O. (Chislehurst)
Dr. T. P. Thomas (Brecon)
Dr. W. E. Thomas (Ystrad Rhondda)
Dr. W. T. Thomas (Liverpool)
Dr. J. H. Thompson (Nottingham)
Mr. W. Thompson (Leeds)
Dr. Wm. C. Thompson (Londonderry)
Dr. A. T. Thomson (Kintyre)
Dr. J. J. Tobin (Derby)
Mr. Hunter Tod (London)
Lieut.-Colonel D. F. Todd (Sunderland)

Dr. J. G. Tomkinson (Glasgow)
Dr. A. E. Tonks (Newport, Mon.)
Colonel A. H. Tubby, C.B., C.M.G. (London)
Dr. Edith E. Tucker (Nottingham)
Dr. A. E. Tunstall (Bradford)
Major G. G. Turner (Newcastle-on-Tyne)
Mr. J. G. Turner (London)
Dr. D. O. Twining (Salcombe)
Dr. William J. Tyson (Folkestone)
Dr. Wilson Tyson (Lowestoft)
Lieut.-Colonel J. L. Van Geyzel (Ealing)
Dr. G. Varley (Minehead)
Dr. R. A. Veale (Leeds)
Dr. R. H. Vereker (Curry Rivel)
Dr. M. H. Vernon (Horsham)
Dr. Alice Vickery (Golders Green)
Mr. E. B. Waggett, D.S.O. (London)
Dr. A. Walker (Oxford)
Dr. C. H. Walker (Clifton)
Dr. J. Walker (Bootle)
Dr. Jane Walker (London)
Dr. R. Wardlaw (Greenock)
Dr. J. A. Waring (Nottingham)
Lieut. A. C. S. Waters, R.A.M.C. (March)
Dr. Chalmers Watson (Edinburgh)
Dr. C. E. S. Watson (Forest Hill)
Dr. G. H. Watson (Cottingham)
Dr. J. N. Watson (Wootton Bassett)
Dr. J. Walker Watson (Elgin)
Dr. W. B. Watson (Harrogate)
Dr. W. M. C. Watson (Harrogate)
Dr. T. H. E. Watts-Silvester (Sturminster Newton)
Dr. P. Watson-Williams (Bristol)
Dr. F. Parkes Weber (London)
Dr. Samuel West (London)
Dr. W. S. West (Aylesbury)
Dr. H. F. La T. White (Caxton)
Sir W. Hale White (London)
Drs. White and Dudley (Caxton)
Dr. R. H. A. Whitelocke (Oxford)
Sir William Whitla, M.P. (Belfast)
Dr. H. S. Wild (Guernsey)
Dr. Elizabeth Wilks (London)
Dr. C. R. Willans (Bournemouth)
Dr. W. H. Willcox, C.B., C.M.G. (London)
Dr. C. H. Willey (Sheffield)
Dr. D. J. Williams (Llanelly)
Major J. F. Williams (Penmaenmawr)
Dr. J. H. Williams (St. Mary's Mount)
Dr. D. Owen Williams (Glandyfi)
Dr. M. W. Williams (Leicester)
Dr. R. S. Williams (Reading)
Dr. W. J. Williams (Middlesbrough)
Dr. A. J. Williamson, D.S.O. (Gidea Park)
Dr. Cecilia F. Williamson (Ipswich)
Dr. J. T. Wills (Felstead)
Surgeon Commander W. Kenneth Wills (Clifton)
Dr. R. J. Willson (Sutton)
Dr. D. Wilson, jun. (Huddersfield)
Major M. Orr Wilson (Isleworth)
Dr. T. Wilson (Birmingham)
Dr. T. S. Wilson (Birmingham)
Dr. Sophia M. V. Witts (Cheltenham)
Mr. C. Woakes (London)
Mr. G. A. Wolfendale (Nuneaton)
Dr. O. R. M. Wood (Bury St. Edmunds)
Dr. T. Outterson Wood (Torquay)
Dr. J. A. Wright (Cambridge)
Dr. W. H. Wynn (Birmingham)
Dr. Richard Wyse (Birkenhead)
Mr. Eric Young (Stoke-on-Trent)

BATHS EXTENSION AT BATH.

A NEW wing added to the Royal Baths at Bath was opened by Dr. Addison, M.P., on June 5th. The main block of the Royal Baths, facing the Grand Pump Room, and consisting of about fifty apartments, was completed early in 1916, but the increased demand for treatment has made necessary the provision of further accommodation. The whole of one side of Bath Street has therefore been converted into a range of bathing and dressing rooms. Fortunately it has been possible to carry out this work without sacrificing the exterior façade of the buildings, for this is one of the very few completely colonnaded streets in the kingdom. No one would suppose from the outside that behind the old Georgian pillars was a modern bathing establishment with every convenience for bathing and douching and electrical and mechanical massage. The newest kind of bathing treatment installed in this wing is one in which the patient lies in a shallow bath—about nine inches deep—and a stream of water is poured through a douche over the masseur's shoulder. Other features are whirlpool and aëration baths, in both of which the water is agitated, in the one case by a revolving turbine and in the other by compressed air driven through a series of finely perforated tubes in the bottom of the bath.

Dr. ADDISON, who was welcomed to the city by the Mayor (Mr. A. W. Wills), in his speech at the opening ceremony, referred to the ancient history of Bath, its stateliness and ceremony and fashion, and to its modern developments, which proved it to be as virile and full of imagination as ever. Virility and imagination were needed in these days, by municipalities as by individuals, and he congratulated the West of England spa upon its possession of these qualities. The Act of Parliament establishing a Ministry of Health had received the royal assent two days previously, so that on the day before at Bristol and on that day at Bath the President of the Local Government Board was making his last public oration and the Minister of Health his first. The establishment of a Ministry of Health, said Dr. Addison, was a most significant indication of the national purpose. Its more immediate effect was to concentrate in one body the duties, so far as they could be exercised by any State department, of safeguarding and promoting the interests of the health of the people. That in itself marked a revolution in our method of approaching and dealing with these matters. It might well be that, in time to come, as the local health services were developed, the Ministry of Health would look to the Bath Corporation to make as fully available for the service of the country as might be possible the local advantages which Bath enjoyed. Whilst it would be the first duty of the Ministry of Health—he hoped before very long—to make proposals to Parliament in connexion with the consolidation and development of local health services, if they read the signs of the times aright they would not be far wrong in supposing that, as in the past, certain responsible duties—duties and not options—had been laid by the Government upon local authorities, that principle would find new extensions, not only in respect to health services but also to housing. He was glad to know that the Bath Corporation had housing schemes in hand, and in the furtherance of those schemes they could count upon the sympathy of his department without, he hoped, being troubled by red tape. He was well aware of the difficulties which surrounded the whole housing question, but both from the point of view of the provision of useful employment and from that of social well-being no purpose could be more urgent. The housing question, however, was common to all localities, but healing springs were the property only of a few. He heard with pleasure of the readiness of the Bath Corporation to co-operate with the Ministry of Health in placing its resources at the service of the whole community, and he was sure that in this matter, as in the general development of its natural properties, Bath would ably sustain its reputation.

Dr. PRESTON KING, in proposing a vote of thanks to Dr. Addison, expressed regret that in Governments past and present there had not been more doctors. He believed that Dr. Addison was the first medical man to hold a position so high in the councils of the State. Doctors were a necessary institution, and even if all the medicine in the *Pharmacopoeia* were thrown overboard, the profession would still be necessary to teach people how to keep well.

Speeches were also delivered by Mr. G. T. COOKE (chairman of the Baths Committee) and others, pointing the moral of Bath's war record. More than two hundred thousand "war baths" have been administered, the greater number, of course, swimming and shower baths for troops in training, but more than forty thousand have been medical treatments for sick or wounded officers and men who have come, as did the soldiers of ancient Rome, to gain new vigour from the health-giving springs.

THE American Red Cross and the United States Children's League have offered £60,000 to the Paris Faculty of Medicine for the foundation of an institute of puericulture on condition that a further sum of £40,000 shall be raised in France. For this purpose a committee has been formed in Paris, and in its name the Dean of the Faculty, Professor Roger, has issued a strong appeal to the people of France. Already contributions amounting to about £20,000 have been received.

British Medical Journal.

SATURDAY, JUNE 14TH, 1919.

THE WHIRLIGIG AT OXFORD.

"THUS the whirligig of time brings in his revenges." Oxford with a coy air of martyrdom may boast herself the home of lost causes, but when the men who seemed to lose, who in their generation lost, had patience, the whirligig has brought in its revenge. The Oxford whirligig moves with the majestic deliberation of some sidereal revolution, but is as inevitable. Of all lost causes in Oxford none seemed more utterly lost than the cause of science. Opprobrious terms with Old English roots were applied to it; has not an Oxford dictionary defined "stink (n.pl. slang)" as "chemistry, natural science, as subject of study"? Even the science of astronomy, which it might have been supposed would, by reason of its respectable antiquity, have commanded more consideration, was allowed to decay; in so much that when the Cista Mathematica—known by an inventory printed in 1697 to have contained the elaborate instrumental outfit of the Savilian Professors of Astronomy—was opened in recent times there remained two beggarly four-inch spheres of beechwood "bisected on the ecliptic."

Oxford ceased for generations to be a school of science, and thus failed in her duty, as was presently borne in upon her by the march of events and of knowledge. Doubtless she has suffered in fame and influence, but not irreparably. There were always, in the nineteenth century at least, a few faithful found among the faithless, and their faith has removed mountains. Science—let us go again to the Oxford Dictionary for the definition, "systematic and formulated knowledge" of natural phenomena—if it has not yet won its rightful share in the life of the university, has come to play in it a part already not small and destined to become greater. Medicine in Oxford decayed so completely that the position was truly expressed in the epigrammatic title of a leading article in this JOURNAL, "The Lost Medical School." The title aroused resentment, as epigrams sometimes will, but it helped to awaken Oxford medical graduates to the truth, and their influence has been one of the causes contributing to the happy fact that the Oxford medical school has found itself.

On Tuesday last Convocation decided that the University should apply for a Government grant or grants on the conditions stated by the President of the Board of Education—namely, that the University should co-operate with the Government in an inquiry into its whole resources and the use which is being made of them. From the speech of the mover (the Warden of Wadham) it appeared that one main motive for seeking a Government grant was the need to find money for science and to ensure that the teachers of science should have something approaching a living wage. Dr. Perkin, professor of chemistry, insisted that the teaching of science was an integral part of the work of the University; it was, he said, inconceivable that its science department should be so hampered for want of money that its teaching should fall below that of other universities. The proposal was carried by 126 votes to 88.

Oxford is now also, and for the third time in twelve years, in the throes of a controversy as to compulsory Greek. Resident members of the university have by an overwhelming vote in congregation carried a statute to make Greek optional in the examinations leading to the B.A. degree; but it is expected that in the final vote in Convocation on Tuesday next there will be a heavy vote by graduates outside Oxford in favour of retaining compulsory Greek in Responsions. This examination is the first on the way to the B.A., and if Greek ceases to be compulsory in it the consequential changes will certainly remove compulsory Greek from all examinations for degrees other than those given for classical studies; thus Greek will cease to be a compulsory subject for the B.A. degree. If Greek is made optional in Responsions it will have an effect upon the secondary schools, for most boys take the examination from school or pass some exempting examination, such as the Oxford and Cambridge Schools Examination, while still at school. The effect will be the greater because Cambridge has already taken a similar course. We published last week a letter on the subject from Dr. Ainley Walker, lecturer in pathology in the university, and this week an appeal, signed by teachers in the Oxford medical school, to medical graduates to go to Oxford on June 17th and vote. Another appeal asking graduates to vote against the proposed statute abolishing compulsory Greek has been issued. The signatories fear that if it is passed the distinctive work and influence of Oxford as the chief home of classical study in this country will decay. They propose as a compromise that Greek should be an optional subject for students of science and mathematics, as well as of agriculture, forestry, and engineering, but should be retained in other cases. They plead that one university shall remain in Britain where "the humane studies are traced back to the springs where they rise." To others the demand that Greek should be compulsory for the B.A. degree seems tantamount to an admission of failure. Does not the demand imply forgetfulness of the history and purpose of universities? They came into existence in response to the demand of youth for knowledge. Greek, which at the Renaissance opened the door of thought and speculation, was eagerly studied on that account. If to-day the need has passed away, and therewith the demand to be taught Greek, is it not the part of Oxford to reconsider its policy of compulsion?

But science in Oxford is far from being an enemy of the old learning. The Regius Professor of Medicine was President of the Classical Association when it met in Oxford last month, and gave an address which left no doubt about this. Afterwards he opened an exhibition of early scientific instruments gathered together from various collections in Oxford, but chiefly from Merton College, where in a cupboard a number had lain forgotten but undamaged. By his kindness a few persons interested in such matters had the opportunity on Whit Monday of spending some interesting hours in the picture gallery of the Bodleian Library, when Mr. Gunther told the story and described the purpose of the objects in the collection which he had been chiefly instrumental in bringing together—astrolobes in their perfection, telescopes in an early stage, and among the microscopes a "double microscope for viewing the circulation of the blood" (1693). Also he showed the book in which an Oxford mathematician first used, to the discomfiture of his printer, the + and − signs, now universally employed. Thereafter Dr. Singer demonstrated a large number of early medical drawings and books, and drew conclusions as to the history of scientific and especially anatomical literature of a very far-reaching

nature, which will require careful and respectful consideration when all the evidence he has accumulated is fully set out. There is much material for the history of science in Oxford, and before the war a school was growing up. Now there are welcome signs of its revival, and it is the ambition of the young school, under the inspiration and with the encouragement of Sir William Osler, presently to embark on a history of science which may be the complement of the great modern history issued by the sister University. It will be as appropriate as fortunate if this aspiration be fulfilled, since Oxford has always been disposed to look for the spirit behind the achievement. Should the modern spirit in Oxford make such a history it would be indeed *une bonne revanche*.

FRENCH WAR SURGERY.

THE complete establishment within the fighting zone of centres of study and instruction by our French colleagues was the outcome of tentative efforts in that direction in 1915 and 1916.

When the French saw that the war was to be a long one, they adopted a general scheme whereby groups of medical officers, twenty to forty in number, could be brought back from the front line and given a short course of instruction mainly in the treatment of war wounds. One of these centres was placed at the Hôpital d'Evacuation (corresponding as near as may be to our casualty clearing station) at Bouleuse. The activity of this field university continued during the summer of 1917 up to January, 1918. We are unable to locate Bouleuse, but as "the military history of the Bouleuse centre was stirring and its end tragic," it probably was involved in the last great German drive. There were gathered together professors of the faculties, hospital surgeons, and highly qualified specialists in various departments of war surgery, for the purpose of systematizing and teaching the principles of the treatment of war wounds. Though in the course of things the study centre was swept away, the teaching has been preserved in the volume before us. *Leçons de Chirurgie de Guerre* is edited by Cl. Regaud of the Pasteur Institute, and published under the auspices of the Military Medical Service.[1] The names of Professor Regaud's collaborators are a sufficient guarantee that we shall find collected together in this volume the best and the final teaching in war surgery of the French school. Leriche, Nogier, and Policard of Lyon; Roux-Berger, Lecène, Guillain of Paris, Tissier of the Pasteur Institute, Piollet of Clermond-Ferrand, and Jeanbrau of Montpellier are some of the authors, each well known in the French surgical world.

Tissier deals with the bacteriology of wounds. The surgical deductions of practical importance are worth quoting. He points out that the gravity of putrid wounds depends on the anaërobic process, but as anaërobes cannot live in healthy tissue they must be assisted by aërobic organisms, or a tissue deprived of its blood supply, or, better still, by both of these conditions. Besides this, the more or less rapid extension of the process depends on the nature of the superadded aërobe. Further, in purulent wounds the infection will develop just as fast as it finds lacerated tissue; each wound possesses a peculiar microbic flora, and its evolution depends on that flora. Only the most careful excision of dead tissues performed with the greatest possible rapidity can arrest the anaërobic process and paralyse the development of the aërobic infection. Then, as every open wound is exposed to secondary infection, the method of prevention is to close by suture. The streptococcus is invariably to blame for rapid extension of putrid or purulent infection. He accepts the dictum of Gross: every wound not containing streptococci ought to be closed by primary suture, and, if excision has been possible, ought to heal.

Transfusion of blood is described by Jeanbrau. He maintains the great efficiency and ease of the citrated blood method. The lower end and angled nozzle of an ampoule modelled on Kimpton's is charged with 25 c.cm. of 10 per cent. sodium citrate solution. The nozzle is inserted into the vein of the donor, pointing distally, and the blood is coaxed into the ampoule by suction and is citrated as it passes in. When 500 c.cm. have been collected the nozzle is inserted into the recipient's vein proximally, and the blood is helped out of the ampoule by the pump. The author is frank enough to say that he never worried about the special selection of a donor. If he had time to do a Wassermann and the haemolysis and agglutination test, well and good; but apparently any attempt to find out how the patients and donors stood in relation to Moss's groups was not made. Only by questioning did he exclude syphilis and malaria. On one occasion he inoculated a patient, presumably a Frenchman, with malaria, from the blood of a Senegalese; but the interesting point of possible racial blood incompatibility is not mentioned.

Primary suture of wounds is described by Lemaitre. He began this method of treatment in July, 1915, and in the two years following he had 48 per cent. of complete successes in all sorts of wounds. From July, 1917, to February, 1918, in wounds of the soft parts, some of these involving bone (without fracture) and joints and vascular lesions, he achieved success in nearly 80 per cent. Lemaitre's operative method consisted in suture after meticulous aseptic excision of the wound, careful haemostasis and "fixation" by thorough swabbing with 5 per cent. tincture of iodine —"fixation" means that the organisms on the surface of the wound are killed along with the superficial cells.

The chapters on the operative and on the orthopaedic treatment of fractures are by Leriche, as also is the lecture on wounds of joints. The well known technique of this surgeon, by which he preserves the periosteum and especially its subjacent osteogenetic layer, by carefully chipping off the ragged soiled splinters of bone, is fully set forth and deserves to be studied by all British surgeons. Similarly we commend the chapter on pulmonary wounds by Roux-Berger—that most accomplished surgeon and (a rare finding) excellent English scholar. He insists on pulmonary wounds being dealt with in the same manner as wounds of limbs: cases requiring operation should be done early, the broken pieces of ribs removed, the pleural cavity thoroughly dried out, and the lobe of the injured lung should be delivered into the wound, the pulmonary wound excised, the foreign body removed, the lung sutured again, and finally the pleural cavity should be completely closed off.

Consideration of space prevents us quoting further from these lectures. We most heartily commend them to the attention of English-speaking surgeons. The book should be of great historical value, and the experience embodied in it will certainly find a place in future French textbooks of surgery. British readers will recognize, what has been already evident to those of us fortunate enough to meet French surgeons and see their work, that a brilliant revival of French surgery was imminent before the war, which has indeed acted as a stimulant to greater enterprise.

[1] *Leçons de Chirurgie de Guerre*. Published under the direction of Cl. Regaud, Professeur à l'Institut Pasteur, etc. Paris: Masson et Cie. (Med. 8vo, pp. 394; 171 figures. Fr. 9 + 10 per cent.)

BIRTHDAY HONOURS.

The Birthday Honours List, which is being issued in sections, contains some interesting announcements of the recognition of the services rendered during the war by temporary and territorial medical officers. The K.C.B. is conferred on Sir Anthony Bowlby, who was consulting surgeon at General Head Quarters in France from the black autumn of 1914 until the other day. The K.C.M.G. is conferred on Major-General Sir Wilmot Herringham, who served as consulting physician at various times of the First, Third, and Fourth Armies, and was at Head Quarters during the greater part of the war; on Major-General Cuthbert Wallace, who was consulting surgeon with the First Army throughout; on Colonel W. T. Lister, who was ophthalmic specialist with the armies in France; and on Major-General Richard H. Luce, C.B., of Derby, a territorial medical officer of long standing, who was D.D.M.S. of the Eastern Force. Among officers of the Australian Army Medical Corps honoured are Sir Neville R. Howse, V.C., K.C.B., Director of Medical Services, and Colonel Henry C. Maudsley, of Melbourne, who served in Europe throughout the war; both receive the K.C.M.G. Surgeon-General Charles S. Ryan, C.B., Consulting Surgeon to the Australian Force, receives the K.B.E. The same distinction is conferred upon a number of consulting officers of the Territorial Force who served chiefly in this country; among them are Colonel Henry Davy, C.B., of Exeter, who has been consulting physician in the Southern Command; Lieut.-Colonel D'Arcy Power; Colonel Hamilton A. Ballance, C.B., of Norwich; Colonel Charters J. Symonds, C.B., Sir Arthur W. Mayo-Robson, who have been consulting surgeons of the Southern Command; on Sir Robert Jones, C.B., Inspector-General of Military Orthopaedics; on Lieut.-Colonel Sir Shirley F. Murphy, who placed his immense knowledge of London sanitary administration at the disposal of the London Command; on Colonel G. Sims Woodhead, Professor of Pathology in the University of Cambridge; on Lieut.-Colonel Douglas Reid, C.M.G., of St. Thomas's Hospital, who has been President of the War Office *X*-ray Committee; and on Lieut.-Colonel F. W. Mott, F.R.S., of the value and importance of whose work at the Maudsley Military Neurological Hospital our readers have had some opportunity of judging. The medical staff of the British Forces in Italy is honoured in the person of Major-General F. R. Newland, C.B., who was D.M.S., and receives the K.C.M.G., and Colonel C. Gordon Watson, C.M.G., who receives the K.B.E. The same distinction, conferred on Colonel H. M. W. Gray, C.B., of Aberdeen, will give great pleasure to those who served with him in the Third Army in France and afterwards when he came home to work with Sir Robert Jones in the department of military orthopaedics. Among the regular officers honoured are Lieut.-General Sir William Babtie, K.C.M.G., who receives the K.C.B.; Major-General Harry N. Thompson, who was D.M.S. of the First Army and is now D.M.S. of the army on the Rhine, who receives the K.C.M.G.; and Major-General G. B. Stanistreet, C.B., Deputy Director-General at the War Office, and Colonel R. H. Firth, C.B., so well known as an authority on general as well as military hygiene, who receive the K.B.E. The distinction of C.B. is conferred on Colonel William Taylor of Dublin, one of the consulting surgeons to the forces. Lists of other honours are printed at p. 749, where also will be found particulars of the services of medical officers of the Royal Navy who have received appointments in the Orders of knighthood. Of the civil honours conferred we may note the knighthoods to Dr. John Baker, Superintendent of the Broadmoor Lunatic Asylum, and to Dr. Douglas Shields, a Melbourne graduate who has been senior surgeon to the Officers' Hospital, Park Lane, London, during the war, and the C.B. to Dr. R. W. Branthwaite, one of the Commissioners of the Board of Control.

THE FILTER-PASSING VIRUS OF INFLUENZA.

A series of three papers on filter-passing virus in certain diseases, contributed to the Section of Preventive Medicine and Pathology at the clinical and scientific meeting of the British Medical Association last April, was published in the British Medical Journal on May 17th. The first, by Major-General Sir John Rose Bradford, gave a general account of observations made in polyneuritis, encephalitis, trench fever, influenza, and nephritis; the second, by Captain E. F. Bashford, M.D., described the experimental reproduction of influenza, nephritis, and encephalitis by inoculating subcultures of the isolated virus; and the third, by Captain J. A. Wilson, the bacteriological character of these filter-passing organisms. These authors had published a preliminary paper in our columns on February 1st, and a full account of the observations on acute infective polyneuritis in the *Quarterly Journal of Medicine* early this year. In the current issue of the same periodical the same three authors publish three papers on the filter-passing virus, illustrated by excellent drawings of the appearances presented by artificial cultivations of the organism and of the effects produced by experimental inoculation. Captain Wilson summarizes his bacteriological observations by stating that an organism possessing definite morphological and cultural characters has been isolated from cases of influenza, and can be demonstrated in the blood, sputum, and other exudates, and in the tissues *post mortem* by appropriate methods of staining. It passes through bacteriological filters, has been seen microscopically in the filtrate, and has been cultivated therefrom. It has not been found in a large series of controls. At the onset of the disease blood culture is the only reliable method of examination. Though organisms can be seen microscopically in stained films of the blood the procedure is difficult and lengthy, and may fail even in the hands of one who has had considerable experience. When sputum is obtainable, usually on the second day, microscopic examination is sufficient for the purpose of clinical diagnosis. The films may be stained by Gram's method or by methylene blue. There is no difficulty in finding the organisms, and their size, arrangement, and distribution would appear to be diagnostic. The same is true of pleural fluids and other exudates. Sir John Rose Bradford, in summing up the matter, says that inoculation of pure cultures of the organism has reproduced in the experimental animal the characteristic lesions of influenza in man, including the peculiar lung lesion, the fatty change in the heart and liver, the nephritis, the cerebral lesions, and the peculiar haemorrhagic lesion in the voluntary and cardiac muscles. The experimental results revealed further the remarkable vascular lesions produced in the small arterioles by the virus of influenza. They therefore support the view that influenza is not a local disease of the respiratory tract, but a general infection of the blood stream, with localization of definite lesions in the smaller blood vessels, the vessels of the lung suffering to a very special degree. Tissue so damaged, it may be assumed, is specially prone to suffer secondary infections, and this may be held to account for the frequent prominence of pulmonary lesions in influenza. The virus is allied to the filter-passing virus of the other diseases already mentioned, resembling them in its morphology, in cultural reactions, and to some extent in the action on living tissues. There are, however, individual differences which justify the authors in stating that the lesions produced by the filter-passing virus of influenza are specific and characteristic. Appended to the paper are clinical notes by Dr. F. Clayton of sixty cases of influenza from which the virus was recovered. The cases are grouped under four heads: firstly, mild cases, in which the upper part of the respiratory tract alone is affected; secondly, haemorrhagic influenza, the most fatal type; thirdly, influenzal pneumonia, and fourthly, influenzal pleurisy with effusion.

The haemorrhagic type is characterized by the sudden onset of bleeding after perhaps a few days of high temperature without localizing symptoms. The pulmonary haemorrhage is preceded by the expectoration of an increasing amount of watery sputum, which rapidly becomes blood-stained, and in a few hours intimately mixed with an abundance of pure bright blood. The haemoptysis is often accompanied by bleeding from the nose. After the onset of the haemorrhage the whole aspect of the patient is changed; he becomes increasingly cyanosed and restless and often passes quickly into a moribund state. Recovery in severe haemorrhagic cases is unusual, and their fatal character finds an explanation in the profound vascular lesions described. The great interest of these researches is obvious, and we are glad to know that Sir John Rose Bradford and his colleagues are pursuing their inquiries and that they are enjoying the hospitality of the Lister Institute. In a discourse at the Royal Institution a fortnight ago Sir John gave a general account of these researches and indicated their significance.

THE TEACHING OF PEDIATRICS.

ADVANTAGE was taken of the presence in this country of several physicians belonging to the staff of pediatric divisions of medical schools in the Dominions and the United States of America to hold an informal conference last March at the Local Government Board to consider generally the subject of pediatrics. Sir George Newman was in the chair, and we are indebted to the Secretary of the Board for a copy of a report containing notes of the speeches made and the text of a series of resolutions adopted by the conference. The print contains three appendices, one of which, defining the manner of working of schemes of maternity and child welfare in England and Wales, will be found useful for reference. The discussion did not elicit any very novel opinions, except possibly on one point, and the resolutions expressed the general view of the profession with regard to the supreme importance of breast feeding, the impropriety of suckling a child too often, and recommendations that practical and theoretical instruction in infant hygiene should form part of the training of midwives and of all persons engaged by public authorities in infant welfare work, and that maternity nursing should only be undertaken by competent and adequately trained persons, preferably by qualified midwives. A point of some novelty was contained in the statement by Dr. Ramsey, Associate Professor of Diseases of Children in the University of Minnesota, and Lieut.-Colonel G. S. Strathy, C.A.M.C., Assistant Physician to the Hospital for Sick Children, Toronto, and Demonstrator in Clinical Medicine in the University. Dr. Strathy explained that the fifth year at Toronto was entirely devoted to clinical work, and that of this period three months were given to specialties and one half of that time to pediatrics. The student attended the clinic at the Children's Hospital regularly, and might be instructed to visit the infant at its home from day to day during the interval between its visits to the clinic. The Children's Hospital was practically a university hospital, and all the sick children in the town who were in public charge came under its care. There were two sections in the hospital staff—the Pediatric Division, which looked after the child from birth until 18 months, and the Medical Division, which had it in charge from the age of 18 months to 14 years. Dr. Ramsey said that in the medical school of the University of Minnesota there was a separate department of pediatrics, with a whole-time professor, an associate professor, and its own staff of clinical assistants, mostly half-time men. In establishing a separate department Minnesota had followed the lead of Harvard. He considered that in a medical school there should be intensive teaching in pediatrics, which was a fundamental subject, and that this should be given in very close co-operation with the obstetrician. The average medical man made the mistake of approaching a child from the pathological standpoint; it was far more important to teach the student to understand the normal infant and to recognize the causes which laid the foundations of disease. Speaking of the advantages of breast feeding, he said that there should be only five feedings in twenty-four hours—that is to say, every four hours, except at night. Children so managed thrived better and gained weight better. An interesting observation was made that whereas English, German, and American textbooks laid it down that the normal number of stools in twenty-four hours in an infant was three to six a day, with only five feeds in the twenty-four hours the number of stools was two a day. No case of acute dyspepsia occurred among 300 new-born infants carefully observed; they slept at night and their mothers slept also. Another observation bearing on the impropriety of too frequent feeding was that the German professors' allowance of a diet yielding 100 calories per kilo was not applicable to the first two weeks. In the series of 300 infants it was found that they gained most satisfactorily on from 45 to 70 calories per kilo, and that when the amount was increased to 100 they tended to have diarrhoea. The conference adopted two resolutions with regard to the education of medical students; the first was: "That every medical student preparing for a registrable qualification shall receive adequate training in the subjects of infancy and childhood in health and disease; that attendance in a department where instruction is given in these subjects should be compulsory for a period of not less than three months; and that some special part of the final examination in medicine should be devoted to these subjects." The second was: "That, as far as practicable, this study shall follow upon, and be co-ordinated with, a satisfactory course in obstetrics and gynaecology, and should be made available for post-graduate students; further, we are convinced that the present training in obstetrics leaves much to be desired, especially in regard to the lack of facilities for bedside teaching in midwifery."

THE CONSTITUTION OF NITROGEN.

THE discovery by Becquerel in 1896 that uranium salts spontaneously emitted radiations led to investigations into the properties of radio-active substances, which showed that the atoms of this class of bodies were not the immutable units of matter the chemist had assumed. It was found that in fact atoms of radium and other radio-active bodies were perpetually changing by the expulsion of particles. Such observations stimulated speculation and experiment as to the constitution of the atom, and we have been presented with the idea of a central nucleus surrounded by particles—a kind of planetary system held together by an attractive force strong enough in most cases to prevent disruption, but weaker in radium and the other radio-active substances, so that from them alpha particles are perpetually being expelled. This fact and these speculations prepared us to believe that the atoms of other substances might be compelled to undergo partial disintegration. The recent researches which Sir Ernest Rutherford related in a consecutive manner to the Royal Institution last week appear to prove that nitrogen can be compelled to undergo such disintegration. He used the alpha particle—which travels with almost inconceivable speed and possesses enormous energy—as an analytical instrument, and found that when one of them hits the nucleus of a light atom, such as that of hydrogen, in a head-on collision the hydrogen atom is displaced a certain distance in the line of motion of the particle. Owing to its swift motion and great energy the alpha particle penetrates into the structure of an atom of nitrogen before it is deflected or turned back. When this heavier atom of nitrogen is hit, a few particles are forced from it and travel as far as hydrogen atoms; they in fact

appear to be hydrogen atoms. The conditions of experiment were held to exclude the possibility that the hydrogen came from external sources, and the conclusion was that it must come from the nitrogen. It would appear as though an atom of hydrogen is chipped off from the atom of nitrogen by the alpha particle, and Sir E. Rutherford ventured the hypothesis that the nitrogen atom, the weight of which is 14, consists of a central nucleus of three atoms of helium, each of mass 4, and of two atoms of hydrogen.

VENTILATION OF CINEMA THEATRES.

THERE is a very general belief, shared, we imagine, by most members of the medical profession, that the infection of influenza is frequently spread in places of public assembly, such as churches, lecture rooms and theatres, and that among the theatres cinematograph halls are particularly to be dreaded, not because they are worse ventilated than other places, but because children and young adults visit them frequently and spend many hours in them. An investigation of the ventilation of cinematograph theatres in Birmingham has been made by Dr. W. H. Davison, one of the assistant medical officers, and his report has been presented to the Public Health Committee by Dr. John Robertson, the medical officer of health. It is suggested in the report that the standard of ventilation should be such as to ensure that the proportion of carbonic acid in the air at about the breathing level does not rise beyond twenty volumes per 10,000 of air; to achieve this it is recommended that fans should be fitted and maintained in good order, and that the space allowed for each person should be not less than 120 cubic feet. Dr. Robertson observes that the provision of adequate ventilation everywhere in a cinematograph theatre when the house is full is no easy matter, but the difficulty has been solved in some of the houses in Birmingham, where in mid-winter full houses were ventilated under the most difficult conditions. The general principles he lays down as necessary for securing adequate ventilation are, first, that efficient extraction fans must be kept continuously at work during the performance, and secondly, that adequate inlet openings must be provided and kept open in such situations as will permit of uniform distribution of the fresh air. During cold weather this incoming air must be heated, otherwise unbearable draughts will be experienced. A point made by Dr. Robertson is that doors should be so arranged that in the intervals between performances houses may be thoroughly flushed with fresh air. Unfortunately, in some of the larger houses there is no break in the afternoon and evening performances.

SYPHILIS AND HERPES ZOSTER.

CAPTAIN W. H. BROWN and Dr. B. DUJARDIN[1] have recently investigated the question of the relation, if any, between syphilis and herpes zoster. Among 12 cases of herpes zoster observed by Brown there were 2 only in syphilitic subjects, and among 19,000 cases of syphilis Major C. White observed herpes zoster during treatment with salvarsan or neo-salvarsan in two only; but these patients after discharge from hospital return to their units, and consequently herpes zoster, which is more likely to develop some time after treatment, would be reported through another channel. It is specially interesting to note the rarity of herpes zoster during the course of this form of arsenical treatment, for during the epidemic of peripheral neuritis, which also takes some time to develop, due to beer contaminated with arsenic in 1900, herpes zoster was observed to be specially frequent, and indeed suggested to Dr. E. S. Reynolds that arsenical poisoning might be responsible for the extensive outbreak of peripheral neuritis. But among 1,200 syphilitic patients kept under observation for a much longer time than those tabulated by Major White, Dujardin found 9 cases of herpes zoster, or 0.4 per cent., as compared with an incidence of 10 cases of zoster, or 0.1 per cent., among 13,000 other patients under his observation. It would therefore seem that syphilitic patients are disposed to herpes, and it is suggested that the meningeal reaction present in the majority of luetic subjects, especially after the primary stage, opens the way to infection by the unknown cause of herpes zoster, and that inefficient arsenical treatment may in certain circumstances accentuate this syphilitic meningeal reaction, and so reinforce this predisposition to herpes zoster. It also appears that in syphilitic patients herpes zoster has a predilection for the lumbar and sacral ganglia, and hence the possibility of previous syphilitic infection should be more especially considered when the zoster involves the lower spinal ganglia. In view of the well marked inflammatory changes in the posterior root ganglia it would be natural to expect alterations in the cerebro-spinal fluid in herpes zoster, but comparatively few observations have been made on this point. The authors have accordingly examined the cerebro-spinal fluid in 42 cases of zoster, mainly non-syphilitic, and found that in the majority (28) there was some lymphocytosis, but that it varied enormously from the normal 1 or 2 up to 470 cells per cubic millimetre, 10 cases registering over 50 cells per cubic millimetre. There was no explanation for these differences, and certainly they bore no relation to the intensity of the eruption, as might perhaps have been anticipated, for on the whole the highest counts were found in patients with a very slight abortive eruption. On the other hand, some cases with a mild eruption had normal counts, and cases with acute and extensive zoster varied in an extraordinary way from a normal cell count up to 200 per cubic millimetre.

[1] *Brain*, 1919, xlii, 86-91.

AERIAL SPAS.

IN a brightly written article in the current number of the *National Review*, Captain E. Brown, R.A.M.C., first argues in favour of the truism that mankind is ever slow to change the fixed beliefs of the ages, adding the rather sarcastic corollary that his conservatism is always supported by the best expert advice of the day, and then brings forward certain novel ideas in order to disseminate in the public mind the view that there may be something in aerial medicine. Although a permanent residence in the air is not yet feasible, the development of the giant airship provides possibilities of remaining at high altitudes for considerable periods at a stretch. Thus a germ-free atmosphere (superior in this respect to that for which the rich journey to Davos-Platz) can be obtained 5,000 feet above Oldham or Bradford for those with shallower purses; and the picture of aërial hospitals for early pulmonary tuberculosis, gliding gracefully over our cities, is drawn, not as the phantom of a dream, but as a realizable possibility. The advantages and disadvantages of the altered atmospheric pressure are discussed; they are, of course, familiar, but the reader's attention is specially directed to the volume and movement of the air at high altitudes as possibly factors of considerable importance, for the degree of motion and the immense volume present at high altitudes can rarely, if ever, be obtained on the earth. The author, who certainly writes with enthusiasm, foresees vast curative possibilities from the stimulating effect thus provided, and prophesies that we may in time go to aërial spas just as we now go to Bath or Harrogate for certain diseases. A month or two ago we received from Captain H. W. Bernard, R.A.M.C., a communication in which he worked out in some detail the requirements for fitting out a captive airship as a tuberculosis sanatorium.

BIRTHDAY HONOURS.

THE following is a further instalment of honours conferred on the occasion of the King's birthday.

ROYAL NAVY.

The distinctions indicated have been bestowed upon the following officers of the medical service of the Royal Navy:

K.B.E.

Surgeon Rear Admiral Patrick B. Handyside, C.B.

This officer was Deputy Surgeon-General at the Royal Naval Hospital, Plymouth, on the outbreak of war. He was promoted to Surgeon Rear Admiral on April 17th, 1917, and was appointed in charge of the Royal Naval Hospital, Chatham, on August 14th, 1917, where he is still serving.

Surgeon Captain Daniel J. P. McNabb, C.B.

On the outbreak of war he served at the Medical Department as First Assistant to the Director-General. He was in charge of the landing of Belgian wounded at Dover after the fall of Antwerp in 1914, was promoted to Surgeon Captain on August 7th, 1915, and appointed Deputy Director-General Medical Department on June 5th, 1916.

Surgeon Captain Arthur Stanley Nance, C.B., R.N.

From the beginning of the war he was Naval Medical Transport Officer for Scotland, with head quarters at Edinburgh, and was largely concerned in the development of the land medical transport system in the North.

Surgeon Rear Admiral William W. Pryn, C.B.

On the outbreak of war he was in charge of the R.N. Hospital, Gibraltar, as Deputy Surgeon-General. In January, 1916, he was transferred to R.N. Hospital, Plymouth, as senior physician. He was promoted to Surgeon Rear Admiral on September 6th, 1916, and appointed in charge of R.N. Hospital, Plymouth, on April 26th, 1917, where he is still serving.

C.B.

Surgeon Captain William J. Colborne.

On the outbreak of war he was serving in the *Iron Duke*, flagship of the Commander-in-Chief, Grand Fleet, and was senior medical officer on the staff of the Commander-in-Chief until February, 1916. He was then appointed in charge of the Royal Marine Artillery, Portsmouth, where he served until promoted Surgeon Captain on September 6th, 1916. In October, 1916, he was appointed to R.N. Hospital, Haslar, where he has been in charge of the Senior Medical Section.

Surgeon Captain George T. Collingwood, M.V.O.

He was placed in charge of H.M. Hospital Ship *Soudan* on the outbreak of war and served in the Gallipoli campaign until 1915, when he was appointed to the Royal Marine Division, Forton, Portsmouth. In November, 1916, he was promoted to Surgeon Captain, and has served in R.N. Hospital, Chatham, up to the present time.

Surgeon Rear Admiral Alexander G. Wildey.

At the outbreak of war he was Deputy Surgeon-General at Haslar Hospital, where he was the senior operating surgeon. In January, 1916, he was transferred as principal medical officer in charge of R.N. Hospital, Gibraltar, where his administration was most successful. He was promoted Surgeon Rear Admiral on September 13th, 1918, and was appointed in charge of Haslar Hospital in October, 1918, where he is still serving. He is also naval member of the Medical Consultative Board.

C.B.E.

Surgeon Captain Octavius W. Andrews, R.N.

He served in H.M.S. *Revenge*, and during the early bombardments of Zeebrugge, and in *Prince George* in the Gallipoli campaign. He was then in charge of the East London Recruiting District until July, 1917, when he was appointed to H.M.S. *New Zealand* in the Grand Fleet, and he served therein till the end of hostilities. He was mentioned in dispatches by the Vice-Admiral Commanding in the Eastern Mediterranean and awarded the Silver Medal for Valour by H.M. King of Italy in November, 1917.

Military Cross.

Temporary Surgeon Lieutenant Reginald K. Shaw, R.N., attached *Anson* Battalion R.N. Division, R.N.V.R.

K.C.B.

Major-General (temporary Lieut.-General) Sir William Babtie, V.C., K.C.M.G., C.B., K.H.S.

Temporary Major-General Sir Anthony A. Bowlby, K.C.M.G., K.C.V.O., C.B.

K.C.M.G.

Major-General Sir Neville R. Howse, V.C., K.C.B., A.A.M.C.

Major-General Foster Reuss Newland, C.B., C.M.G.

Major-General H. Neville Thompson, C.B., C.M.G., D.S.O.

Temporary Major-General Sir Wilmot P. Herringham, C.B.

Temporary Major-General Cuthbert S. Wallace, C.B., C.M.G.

Colonel (temporary Major-General) Richard H. Luce, C.B., C.M.G., T.F.Res.(A.M.S.).

Colonel Henry Carr Maudsley, C.M.G., C.B.E., A.A.M.C.

Temporary Colonel Wm. Tindall Lister, C.M.G.

K.B.E.

Colonel (temporary Major-General) George B. Stanistreet, C.B., C.M.G., A.M.S.

Colonel (honorary Surgeon-General) Charles S. Ryan, C.B., C.M.G., A.A.M.C.

Colonel Robert H. Firth, C.B., A.M.S.

Temporary Colonel C. Gordon Watson, C.M.G., A.M.S.

Lieut.-Colonel and Brevet Colonel G. Sims Woodhead, O.B.E., R.A.M.C.(T.F.).

Lieut.-Colonel (temporary Colonel) Henry Davy, C.B., R.A.M.C.(T.F.).

Lieut.-Colonel Sir Shirley F. Murphy, R.A.M.C.(T.F.).

Lieut.-Colonel D'Arcy Power, R.A.M.C.(T.F.).

Major (temporary Major-General) Sir Robert Jones, C.B., R.A.M.C.(T.F.).

Major (temporary Colonel) Hamilton A. Ballance, C.B., R.A.M.C.(T.F.).

Major (temporary Colonel) Charters J. Symonds, C.B., R.A.M.C.(T.F.).

Major and Brevet Lieut.-Colonel Frederick W. Mott, F.R.S., R.A.M.C.(T.F.).

Major (temporary Colonel) Henry McI. W. Gray, C.B., C.M.G., R.A.M.C.(T.F.).

Major (temporary Lieut.-Colonel) Sir Arthur W. Mayo-Robson, C.B., C.V.O., R.A.M.C.(T.F.).

Captain (temporary Lieut.-Colonel) Archibald Douglas Reid, C.M.G., R.A.M.C.(T.F.)

Knights Bachelor.

Dr. John Baker, Superintendent of the Broadmoor Lunatic Asylum.

Mr. Douglas Shields, Administrator and Surgeon-in-Chief of the hospital at 17, Park Lane, which he gave free of charge for the use of the War Office.

C.B.

Dr. Robert Welsh Branthwaite, of the Board of Control.

Temporary Colonel William Taylor, F.R.C.S.I.

C.M.G.

Lieut.-Colonel and Brevet Colonel Allan James Macnab, C.B., I.M.S.

C.S.I.

Colonel Charles Mactaggart, C.I.E., I.M.S., Inspector-General of Civil Hospitals, United Provinces.

C.I.E.

Lieutenant-Colonels: Ralph Henry Maddox, I.M.S., Richard Arthur Needham, D.S.O., I.M.S., Deputy Director-General I.M.S., John Stephenson, I.M.S., Principal and Professor of Biology, Government College, Lahore.

Majors (acting Lieutenant.-Colonels): William M. Anderson, I.M.S., Arthur B. Fry, D.S.O., I.M.S., Leonard E. Gilbert, I.M.S., William D. A. Keys, I.M.S., Patrick L. O'Neill, I.M.S.

Captain (temporary Major) Gordon G. Jolly, I.M.S.

D.S.O.

Lieut.-Colonels: Hugh B. Lewers, O.B.E., 11th Field Ambulance, A.A.M.C.; Ronald H. Macdonald, M.C., 4th Field Ambulance, C.A.M.C.; Gerald Eugene M. Stuart, A.A.M.C., commanding 3rd Light Horse Field Ambulance; Clive W. Thompson, 14th Field Ambulance, A.A.M.C.; Frank C. Wooster, 13th Field Ambulance, A.A.M.C.

Major and Brevet Lieut.-Colonel (acting Lieut.-Colonel) Herbert M. H. Melhuish, I.M.S., commanding 111th Combined Field Ambulance.

Majors (temporary Lieut.-Colonels): Philip J. Jory, 2nd Field Ambulance, N.Z.A.M.C.; John R. Muirhead, 5th Field Ambulance, A.A.M.C.; Clive V. Single, A.A.M.C., commanding 4th Light Horse Field Ambulance.

Majors (acting Lieut.-Colonels): Samuel H. Lee Abbott, I.M.S., attached 14th Cavalry Brigade Field Ambulance; Charles M. Drew, 134th Field Ambulance, R.A.M.C.; Richard H. M. Hardisty, M.C., 6th Field Ambulance, C.A.M.C.; Donald de C. O'Grady, R.A.M.C.; Henry T. Samuel, R.A.M.C.(T.F.), commanding 170th Indian Combined Field Ambulance; Ernest R. Selby, 8th Field Ambulance, C.A.M.C.

Majors: A. Henry Falkner, R.A.M.C.(T.F.) attached 8th Battalion, Liverpool Regiment; Marcus V. Southey, 1st Field Ambulance, A.A.M.C.

Captains (acting Lieut.-Colonels): Henry N. Burroughes, 2/2nd (South Midland) Field Ambulance, R.A.M.C.(T.F.); John H. P. Fraser, M.C., R.A.M.C.(T.F.), attached 53rd Field Ambulance, R.A.M.C.; Rudolf W. Galloway, 2nd Cavalry Field Ambulance, R.A.M.C.; Ivor R. Hudleston, 136th Field Ambulance, R.A.M.C.; Arthur C. H. McCullagh, 2/2nd (Northumbrian Field Ambulance, R.A.M.C.(T.F.); John Miller, M.C., 1/2nd (N.M.) Field Ambulance R.A.M.C.(T.F.); E. Phillips, M.C., 106th Field Ambulance, R.A.M.C.; John W. C. Stubbs, M.C., 16th Field Ambulance, R.A.M.C.; Edmund W. Vaughan, M.C., 23rd Field Ambulance, R.A.M.C.; Leslie F. K. Way, 101st Field Ambulance, R.A.M.C.

Captain and Brevet Major (acting Lieut.-Colonel) Percy S. Tomlinson, R.A.M.C.

Captain (temporary Major) Charles J. O'Reilly, M.C., 70th Field Ambulance, R.A.M.C.

Temporary Captains: Guy de H. Dawson, R.A.M.C., Allen E. Thompson, M.C., R.A.M.C., attached 8th Battalion York and Lancashire Regiment.

Bar to the Military Cross.

Captain (acting Major) Henry Joseph Milligan, M.C., R.A.M.C., T.F. (M.C. gazetted June 4th, 1917).

Military Cross.

Captains (acting Majors): Andrew R. F. Clarke, R.A.M.C. (S.R.), attached 154th Indian Combined Field Ambulance; Alexander E. Drynan, 56th Field Ambulance, R.A.M.C.; Alfred J. Dunlop, 43rd Field Ambulance, R.A.M.C.; William P. Ferguson, 2/3rd East Lancashire Field Ambulance, R.A.M.C. (T.F.); Alexander M. Gibson, 1/2nd East Lancashire Field Ambulance, R.A.M.C.(T.F.); Alfred M. Hughes, 4th London

Field Ambulance, R.A.M.C.; Thomas B. McKee, 2/2nd Home Counties Field Ambulance, R.A.M.C.; John F. W. Sandison, R.A.M.C.(S.R.); Sidney Scott, R.A.M.C.(T.F.), attached 48th Field Ambulance.

Captains: Laurence Ball, R.A.M.C.(T.F.), attached 1/4th Battalion Royal Berkshire Regiment (T.F.); Thomas D. Bennett, 13th Canadian Field Ambulance, C.A.M.C.; David H. Bodycomb, 1st Australian Field Ambulance, A.A.M.C.; William K. Churchouse, R.A.M.C.(T.F.), attached 2/20th Battalion London Regiment; Archie S. Cockburn, A.A.M.C., attached 6th Battalion Australian Infantry; David G. Gardiner, R.A.M.C., attached 9th Battalion Devon Regiment; Hector C. Hall, C.A.M.C., attached H.Q. 2nd Canadian Division; Arthur G. P. Hardwick, 59th Field Ambulance, R.A.M.C.; Alistair C. Macdonald, R.A.M.C.(S.R); O'Connell O'Sullivan, R.A.M.C.(T.F.), attached 14th Battalion Royal Warwick Regiment; Henry J. Rice, R.A.M.C.(S.R.), attached 10th Battalion Liverpool Regiment; Ambert H. Veitch, 3rd Canadian Field Ambulance, C.A.M.C.; Josiah Walker, R.A.M.C.(T.F.), attached 270th Brigade R.F.A.; George H. H. Waylen, R.A.M.C.(T.F.), attached 1/4th Battalion Wilts Regiment (T.F.); George S. Williamson, 2/1st South Midland Field Ambulance, R.A.M.C. (T.F.)

Temporary Captains (acting Majors): Robert K. Birnie, R.A.M.C.; Walter Crabtree, 93rd Field Ambulance, R.A.M.C.; Joseph S. Doyle, 104th Field Ambulance, R.A.M.C.; Wilfred V. Macaskie, R.A.M.C.; Allan Massey, 111th Field Ambulance, R.A.M.C.; Arthur Herbert Spicer, R.A.M.C.; Henry W. Turner, 104th Field Ambulance, R.A.M.C.; Alfred S. Wakely, 1st Field Ambulance, R.A.M.C.

Temporary Captains: Owen A. Beaumont, R.A.M.C., Robert B. Carter, R.A.M.C., Howard E. Collier, R.A.M.C., attached 1st Battalion Gloucester Regiment; Max E. Delafield, R.A.M.C., attached 1/3rd (East Lancashire) Field Ambulance; George E. Elkington, 103rd Field Ambulance, R.A.M.C.; Gilbert J. Farie, 141st Field Ambulance, R.A.M.C.; John B. Galligan, R.A.M.C., attached 62nd Brigade, R.G.A.; Joseph Graham, 38th Field Ambulance, R.A.M.C.; James L. Hendry, R.A.M.C., attached 55th Army Brigade, R.G.A.; George A. Hodges, R.A.M.C., attached 5th Battalion Tank Corps; Havelock T. Lippiatt, R.A.M.C., attached 93rd Brigade, R.G.A.; John B. McCabe, R.A.M.C., Roderic MacGill, R.A.M.C., attached 6th Tank Battalion; John McMillan, R.A.M.C., attached 1st Battalion Tank Corps; Duncan Malloch, R.A.M.C., attached H.Q. 150th Army Brigade, R.F.A.; John B. Matthews, R.A.M.C., attached 1/4th Battalion Oxford and Bucks Light Infantry, T.F.; William L. Paterson, R.A.M.C., attached H.Q. 17th Brigade R.G.A.; William M. Penny, R.A.M.C., attached 64th East Lancs Field Ambulance T.F.; James D. Robertson, R.A.M.C., attached 19th Battalion Machine Gun Corps; Robert H. Thomson, R.A.M.C., attached 7th Cavalry Field Ambulance; Eric M. Townsend, R.A.M.C., Mohammad Salamat Ullah, I.M.S., attached 1/152nd Punjabis, I.A.

Lieut. Arthur Kennedy, R.A.M.C.(S.R.), attached 2/3rd Home Counties Field Ambulance R.A.M.C.(T.F.).

Temporary Quartermaster and Captain Henry G. Miller, 9th Field Ambulance R.A.M.C.

C.B.E.

Major-General Oliver R. A. Julian, C.B., C.M.G., A.M.S.

Colonels: John G. Adami, C.A.M.C., John D. Alexander, D.S.O., late R.A.M.C.; Thomas B. Beach, C.M.G., A.M.S., Frank W. Begbie, late R.A.M.C.; Wilfred W. O. Beveridge, C.B., D.S.O., late R.A.M.C.; James W. Bridges, C.A.M.C., Thomas W. Gibbard, C.B., K.H.S., late R.A.M.C.; Percy G. Goldsmith, C.A.M.C., Henry W. Grattan, D.S.O., late R.A.M.C.; Robert I. D. Hackett, R.A.M.C. (R. of O.), Wilfrid E. Hudlestone, C.M.G., D.S.O., late R.A.M.C.; James A. Hutchison, C.A.M.C., Henry H. Johnstone, C.B. (R.P.), late R.A.M.C.; Robert L. R. Macleod, C.B., R.A.M.C., Reginald J. Millard, C.M.G., A.A.M.C., Frederick J. Morgan, C.M.G., late R.A.M.C.; Daniel O'Sullivan (R.P.), A.M.S., Edgar M. Pilcher, C.B., D.S.O., late R.A.M.C.; Harold V. Prynne, D.S.O., late R.A.M.C.; Herman M. Robertson, C.A.M.C., John C. B. Statham, C.M.G., late R.A.M.C.; Philip G. Stock, C.B., S.A.M.C., Hugh S. Thurston, C.B., C.M.G., late R.A.M.C.; Octavius Todd (R.P.), late R.A.M.C.; Charles R. Tyrrell, C.B. (R.P.), late R.A.M.C.

Brevet Colonel Abraham W. Browne (R.P.), R.A.M.C.

Temporary Colonels: Albert Carless, A.M.S., Sir Arthur Chance, A.M.S., John Marshall Cowan, M.D., A.M.S., Leonard S. Dudgeon, C.M.G., A.M.S., Thomas R. Elliott, D.S.O., F.R.S., A.M.S., Francis Kelly, R.A.M.C.(T.F.), Walter McKeown, C.A.M.C., Joseph F. O'Carroll, A.M.S., John H. Parsons, A.M.S., James Sherren, R.A.M.C., A. E. Webb-Johnson, D.S.O., R.A.M.C.

Lieut.-Colonels and Brevet Colonels: James Paul Bush, C.M.G., R.A.M.C.(T.F.), Reginald J. C. Cottell (R.P.), R.A.M.C., William L'E. Eames, C.B., R.A.M.C., Archibald B. Gemmel, R.A.M.C.(T.F.), Louis K. Harrison, R.A.M.C.(T.F.), Herbert P. Hawkins, R.A.M.C.(T.F.), Frank Marsh, R.A.M.C.(T.F.), Robert R. H. Moore (R.P.), R.A.M.C., C. W. Mansell Moullin, R.A.M.C.(T.F.), Frederick H. Westmacott, R.A.M.C.(T.F.).

Lieut.-Colonels (temporary Colonels): H. Gilbert Barling, C.B., R.A.M.C., Laurence J. Blandford, R.A.M.C.(T.F.), Arthur Winniett Nunn Bowen, D.S.O., R.A.M.C., Bernard Bruce Burke, D.S.O., R.A.M.C., John Hay Campbell, D.S.O., R.A.M.C., John Clay, R.A.M.C.(T.F.), David G. Croll, A.A.M.C., Thomas Fraser, D.S.O., R.A.M.C.(T.F.), Dermot Owen Hyde, D.S.O., R.A.M.C., Hugh M. Morton, D.S.O., R.A.M.C., Charles Edward Pollock, D.S.O., R.A.M.C., James C. Robertson, C.M.G., C.I.E., I.M.S., John P. Silver, D.S.O., R.A.M.C., A. S. Woodwark, C.M.G., R.A.M.C., Ernest Arnold Wraith, D.S.O., R.A.M.C.(T.F.).

Lieutenant-Colonels (acting Colonels): Otto W. A. Elsner, D.S.O., R.A.M.C., George Mills Goldsmith, R.A.M.C., Cyril Henry Howkins, D.S.O., R.A.M.C.(T.F.), Arthur Maunsell MacLaughlin, R.A.M.C., Charles P. Templeton, D.S.O., C.A.M.C.

Lieutenant-Colonels: Hugh T. Dyke Acland, C.M.G., N.Z.M.C., Ernest Rudolf Brown, C.A.M.C., Eustace M. Callender, R.A.M.C.(T.F.), James Calvert, R.A.M.C.(T.F.), Anderson R. D. Carberry, N.Z.M.C., Alexander R. Falconer, N.Z.M.C., Herbert French, R.A.M.C., George E. Gabites, N.Z.M.C., Sir A. Pearce Gould, K.C.V.O., R.A.M.C.(T.F.), David Harvey, C.M.G., R.A.M.C., Edwin C. Hayes, R.A.M.C., Frederick W. Higgs, R.A.M.C.(T.F.), Edward V. Hogan, C.A.M.C., John P. D. Leahy, N.Z.M.C., Charles A. Lees, R.A.M.C.(T.F.), Robert H. Makgill, N.Z.M.C., James F. Martin, C.M.G., R.A.M.C., Hugh M. Morton, D.S.O., R.A.M.C., John H. G. Robertson, N.Z.M.C., Lancelot W. Rolleston, R.A.M.C., Peter C. Smith, R.A.M.C. (T.F.), Francis S. Walker, R.A.M.C., Sinclair White, R.A.M.C. (T.F.), Francis W. E. Wilson, C.A.M.C.

Temporary Lieut.-Colonels: James Johnstone Abraham, D.S.O., R.A.M.C., Sir Robert Armstrong-Jones, R.A.M.C., Maurice Craig, R.A.M.C., Arthur W. Falconer, D.S.O., R.A.M.C.(T.F.), Francis R. Hill, R.A.M.C., Gordon M. Holmes, C.M.G., R.A.M.C., John Robert Lord, R.A.M.C., George Edward Miles, R.A.M.C., Andrew M. Paterson, R.A.M.C. (to date from February 12th, 1919), David George Thomson, R.A.M.C., Charles M. Wenyon, C.M.G., R.A.M.C.

Temporary honorary Lieut.-Colonels: Mervyn H. Gordon, C.M.G., R.A.M.C., Richard G. Rows, R.A.M.C., Thomas E. K. Stansfield, R.A.M.C.

Majors and Brevet Lieut.-Colonels (temporary Lieut.-Colonels): Herbert Vale Bagshawe, D.S.O., R.A.M.C., George S. Jackson, D.S.O., Northumberland Fusiliers (T.F.) and R.A.M.C.

Majors and Brevet Lieut.-Colonels: A. Pearson Luff, R.A.M.C., Henry J. Parry, D.S.O. (R.P.), R.A.M.C.

Major (temporary Major-General): Sir J. Rose Bradford, K.C.M.G., C.B., R.A.M.C.(T.F.).

Major (temporary Lieut.-Colonel) Archibald M. H. Gray, R.A.M.C., James Swain, C.B., R.A.M.C.

Major Philip G. Easton, D.S.O., R.A.M.C.

Major (acting Lieut.-Colonel) John Robinson Harper, R.A.M.C.(T.F.), Henry MacCormac, R.A.M.C.

Temporary Major and Brevet Lieut.-Colonel Frederick S. Brereton, R.A.M.C.

Temporary Major (temporary Colonel) Charles Hewitt Miller, R.A.M.C.

Temporary Majors (temporary Lieut.-Colonels): W. Bickerton Edwards, O.B.E., R.A.M.C.(T.F.), Walter de M. Hill, R.A.M.C.

Temporary Majors and acting Lieut.-Colonels: William P. Sutcliffe Branson, R.A.M.C., Robert Higham Cooper, R.A.M.C.

Temporary Major Frederick N. G. Starr, R.A.M.C.

Captain and Brevet Major (acting Colonel) Claude H. S. Frankau, D.S.O., R.A.M.C.(T.F.)

Captain and Brevet Major (acting Lieut.-Colonel) E. Hurry Fenwick, R.A.M.C.(T.F.)

Captain (temporary Colonel) Harold Burrows, O.B.E., R.A.M.C.(T.F.)

Captain (temporary Lieut.-Colonel) Eric G. Gauntlett, D.S.O., R.A.M.C.(T.F.)

Captain (acting Major) Charles F. Morris Saint, R.A.M.C. (T.F.)

Temporary Captain (acting Lieut.-Colonel) Forbes Fraser, R.A.M.C.

Temporary Captain (acting Major) Ernest Charles Lindsay, R.A.M.C.

To be Lieutenant-General.

Major-General (temporary Lieut.-General) Sir C. H. Burtchaell, K.C.B., C.M.G., K.H.S.

To be Major-General.

Colonel (temporary Major-General) S. Guise Moores, C.B., C.M.G., late R.A.M.C.

Honorary Major-General on Retirement.

Colonel (temporary Major-General) Sir J. M. Irwin, K.C.M.G., C.B., ret. pay, late R.A.M.C.

To be Brevet Colonel.

Lieut.-Colonels (temporary Colonels): H. B. Fawcus, C.M.G., D.S.O., R.A.M.C. J. S. Gallie, C.M.G., D.S.O., R.A.M.C., J. A. Hartigan, C.M.G., D.S.O., R.A.M.C., L. Humphry, C.M.G., R.A.M.C., T. C. Mackenzie, D.S.O., R.A.M.C., W. H. Ogilvie, C.M.G., I.M.S., J. Powell, D.S.O., R.A.M.C., A. H. Safford, R.A.M.C.

Lieut.-Colonels (acting Colonels): W. R. Blackwell, C.M.G., R.A.M.C., J. C. Connor, C.M.G., R.A.M.C., C. R. Evans, D.S.O., R.A.M.C., W. R. P. Goodwin, D.S.O., R.A.M.C., C. T. Green, R.A.M.C.(T.F.), F. McLennan, D.S.O., R.A.M.C., W. Riach, C.M.G., R.A.M.C.

Lieut.-Colonels: T. H. Corkery, ret. pay, late R.A.M.C., W. Howorth, R.A.M.C.(T.F.), H. Littlewood, C.M.G., R.A.M.C.(T.F.).

Surgeon Lieut.-Colonel P. H. Whiston, ret. pay, late Irish Guards.

Temporary Lieut.-Colonel J. W. Alexander, D.S.O., R.A.M.C. and T.F.Res.

To be Brevet Lieutenant-Colonel.

Majors (temporary Lieut.-Colonels): F. J. Brown (ret. pay), R. of O., late R.A.M.C.; F. D. G. Howell, D.S.O., M.C., R.A.M.C.

Majors (acting Lieut.-Colonels): R. B. Ainsworth, D.S.O., R.A.M.C., T. S. Coates, O.B.E., R.A.M.C., F. P. Connor, D.S.O., I.M.S., J. M. H. Conway, D.S.O., R.A.M.C., W. F. Ellis, O.B.E., R.A.M.C., R. Griffith, R.A.M.C.(T.F.), R. A. Lloyd, D.S.O., I.M.S., J. L. Lunham, I.M.S., E. J. Maclean, R.A.M.C.(T.F.), A. W. Sampey, R.A.M.C., R. T. Turner, R.A.M.C.(T.F.), W. F. Tyndale, C.M.G., D.S.O., R.A.M.C.

Majors: A. J. Chambers (ret. pay), R. of O., late R.A.M.C.; W. McAdam Eccles, R.A.M.C.(T.F.), B. F. Hamilton, ret. pay, late R.A.M.C.; R. W. W. Henry, R.A.M.C.(T.F.), H. A. Leebody, R.A.M.C.(T.F.), M. G. Pearson, O.B.E., S.A.M.C., H. Skelding, R.A.M.C.(T.F.), W. C. Smales, D.S.O., R.A.M.C., W. A. Stott, R.E.(T.F.), attached R.A.M.C.; Sir H. F. Waterhouse, R.A.M.C.(T.F.).

Temporary Majors: S. Fleming, R.A.M.C., L. E. Lanyon-Owen, R.A.M.C., A. W. Robertson, R.A.M.C., T. R. St. Johnston, R.A.M.C., T. L. L. Sandes, O.B.E., S.A.M.C.

To be Brevet Major.

Captains (acting Lieutenant-Colonels): J. D. Bowie, D.S.O., R.A.M.C., T. A. Weston, R.A.M.C.

Captain (temporary Major) H. C. Todd, R.A.M.C.

Captains (acting Majors): T. H. Balfour, M.C., R.A.M.C., W. R. Bristow, R.A.M.C.(T.F.), C. M. Fegen, R.A.M.C.(T.F.), R. Gale, D.S.O., R.A.M.C., F. R. Laing, R.A.M.C., N. V. Lothian, M.C., R.A.M.C., W. C. Paton, M.C., I.M.S., M. Purvis, I.M.S., B. Shires, R.A.M.C.(S.R.).

Captains: W. Brander, R.A.M.C.(T.F.Res.), H. Brian-Pearson, R.A.M.C.(T.F.), H. C. Dent, R. of O., A.M.S., H. S. Dickson, R.A.M.C., A. W. Howlett, R.A.M.C., G. H. Hunt, R.A.M.C.(T.F.), R. A. Peters, M.C., R.A.M.C.(S.R.), J. A. Sinton, V.C., I.M.S.

Temporary Captains (acting Majors): W. Fell, R.A.M.C., W. E. P. Phillips, R.A.M.C.

Temporary Captains: J. S. Dunn, R.A.M.C., A. E. Giles, R.A.M.C., R. McC. H. Hill, D.S.O., R.A.M.C., W. B. Purchase, M.C., R.A.M.C., W. S. Stalker and E. C. Williams, R.A.M.C.

Kaisar-i-Hind Medal.

Lieut.-Colonel Richard Henderson Castor, I.M.S. Civil Surgeon, Moulmein, Burma.

Dr. Clement Cornelius Caleb, Professor of Physiology, King Edward Memorial College, Lahore.

Dr. Hugh Gordon Roberts, Officiating Civil Surgeon, Shillong, Assam.

O.B.E.

Colonel Walter Ernest Summons, A.A.M.C.

Lieut.-Colonels (temporary Colonels): William Bennett, D.S.O., R.A.M.C., Harold Simpson, R.A.M.C.

Lieut.-Colonels: Philip O. Andrew, N.Z.M.C., Allan E. K. Bennett, C.A.M.C., Henry F. Bernau, N.Z.M.C., Henry Arthur Berryman (R.P.), R.A.M.C., R. of O., Cole E. C. Cole, C.A.M.C., Martin P. Corkery, R.A.M.C., Charles E. Dennis, A.A.M.C., Henry P. Dimmock, I.M.S., Henry C. S. Elliot, C.A.M.C., Henry G. Falkner, R.A.M.C.(T.F.), P. Fiuschi, A.A.M.C., John G. Foster, R.A.M.C., Francis E. Fremantle, R.A.M.C.(T.F.), Alexander G. Hamilton, R.A.M.C.(T.F.), Michael L. Hearn (R.P.), R.A.M.C., Alexander W. Hogg, N.Z.M.C., Herbert E. R. James, C.B., C.M.G., R.A.M.C., William Love Kirkwood, A.A.M.C., Glen A. W. J. Knight, A.A.M.C., William Little, N.Z.M.C., Thomas D. McDermot, R.A.M.C., Edward G. Mason, C.A.M.C., Charles Milne, I.M.S., Eugene J. O'Meara, I.M.S., Principal, Medical School, Agra; R. J. W. Oswald, R.A.M.C. (T.F.), Christopher T. Parsons, R.A.M.C., Clifford H. Reason, D.S.O., C.A.M.C., Athelston John H. Saw, A.A.M.C., George C. E. Simpson, R.A.M.C.(T.F.), Julian C. C. Smith, I.M.S., Valentine Stacy, A.A.M.C., Guy Neville Stephen, R.A.M.C., Arthur B. S. Stewart, R.A.M.C.(T.F.), George H. Stewart, I.M.S., Hugh C. Taylor-Young, A.A.M.C., James Tidbury, R.A.M.C., Frederick S. Toogood, R.A.M.C., George Usmar, S.A.M.C., William J. N. Vincent, R.A.M.C., R. Melbourne West, D.S.O., R.A.M.C.(T.F.), David A. Whitton, C.A.M.C., Robert E. Wodehouse, C.A.M.C., Frederick A. Young, C.A.M.C., John R. Yourdi (R.P.), R.A.M.C.

(To be continued.)

Correspondence.

THE DETERMINATION OF OCULAR TENSION.

SIR,—May I point out that your annotation on this subject (BRITISH MEDICAL JOURNAL, June 7th), while it insists on the value of the eye tonometer, says nothing of its uncertainties and limitations. The Schiötz tonometer is an excellent instrument, and does well what such an instrument can do, but neither this nor any other can tell us exactly what we want to know.

The term "tension of the eye" is convenient as ordinarily used, but should be avoided when precision is in question; we are concerned with the "intraocular pressure." I will not stop to prove that the tension of the envelope is a different thing from the pressure that falls on it from within, and that it bears no fixed relation to that pressure. The tonometer measures neither of these things. It measures simply the impressibility of the eye, and from this we infer the internal pressure, with some uncertainty, by means of a table or curve showing the average relation of the one to the other; it can only be the average because the relation is not constant. It is not possible to ascertain the exact pressure in any eye by measuring, however accurately, the impressibility of its cornea. Suppose, for example, that in the case of a given eye the tonometer and its curve declare the intraocular pressure to be 25 mm. Hg, we cannot be sure that the figure is correct. Professor Schiötz's test experiments, and my own, have shown that it may err by at least 5 mm. Hg in either direction.

The tonometer can detect change of pressure in a given eye with great precision, but it cannot compare the pressures in different eyes with nearly equal certainty. The problem is more intricate than some "up-to-date" ophthalmic surgeons have yet realized, and I write this brief note as a warning against the present tendency to attribute to the tonometer a degree of precision which no instrument of the kind can possibly achieve. Professor Schiötz himself is far more cautious. I have written more fully in an article which will appear shortly in the *British Journal of Ophthalmology*.—I am, etc.,

Birmingham, June 8th. PRIESTLEY SMITH.

INFECTIVE CATARRHS—SO-CALLED "COLDS."

SIR,—Although given scanty notice in medical textbooks, periodicals, and literature generally, infective catarrh and so-called "colds" are a most important factor—perhaps *the* most important—in the national morbidity and mortality rates.

At the best, a "cold" getting into an average household is a very great nuisance, attacking one child after another, the parents, and the maids (if any), causing some degree of dislocation for probably six weeks; whilst at the worst it is a great danger, carrying off some member by its development into bronchitis, pneumonia, etc., and so never appearing by name on the death certificate or in the mortality returns. In educational and industrial matters "colds" must be the cause of a vast wastage, and of much inefficiency.

The remedies for this unsatisfactory state of affairs lie broadly speaking, in two directions:

1. In bacteriological research, with a view to identifying more precisely the causes, and to find an effective remedy.
2. In better education, both of the profession and the public.

As regards (1) we will only suggest that research should be on a much wider and broader scale than heretofore. Each individual case may be of comparatively little importance, but a "cold" being the commonest disease in the country, it merits investigation commensurate with its frequency. We would suggest that the Medical Research Committee might well turn its attention in this direction.

As regards (2) we think by far the most important step in the educational line is to adopt a proper name for this class of infection. As long as a definitely infective condition is called a "cold" or a "chill" by the doctor, it will quite naturally be treated by the patient as if due to a cold—that is, he will wrap up (probably too much), shut up the windows, and so unconsciously do his best to spread infection to the rest of the household. This line of treatment has been seen in numberless cases in the recent epidemic with disastrous results. But we would go further, and say that as long as the view of the patient that his condition is due to "chill" or "cold" is acquiesced in by his doctor, or as long as the latter tolerates the designation "cold" (and one quite realizes how very easy it is so tacitly to agree with one's patient), there will be no real educational progress in such matters.

In reading old medical and surgical textbooks one is struck by the fact that almost every ailment to which flesh is heir has been said to be due to cold, whereas comparatively few are so attributed by modern physicians. Apparently, when no other cause could be demonstrated, "cold" was always invoked; and as exposure to some degree of cold in our climate cannot be avoided, it was quite easy to confuse the "post hoc" with the "propter hoc."

But now we, as members of a scientific profession, should have outgrown such weaknesses, and should not

use terms implying an etiology for which there is no justification.

In bulletins about the health of distinguished personages we are frequently informed that "So-and-so" is suffering from "a severe chill" or "a bad cold," etc. Surely it would be better to say "a pyrexial attack" or "acute nasal catarrh," if such are meant. If men high up in the profession use loose terms, what can be hoped of the humble G.P.?

We should like to see some eminent authorities, such as the Presidents of the Royal Colleges, the President of the British Medical Association, or those who have evinced particular interest in the matter, like Sir A. Newsholme or Dr. Leonard Hill, definitely propose to the profession that the terms "cold" and "chill" (as signifying diseases) should be once for all discarded as unscientific and false etiologically. When, however, we come to consider what terms shall be used in place of those dropped, difficulties arise. The correct term for a "heavy cold in the head" extending from nose to larynx would be, we suppose, "acute infective nasal, nasopharyngeal, and laryngeal catarrh," but this would obviously be too cumbersome; it might be abbreviated to "infective catarrh" perhaps, or even some shorter term coined.

The term "coryza" has much to recommend it, being short and non committal. But as this term does not cover a laryngeal catarrh, we think it is not entirely suitable. Also it is important that the *infective* element should appear even in the name, if the latter is to have in future a positive educational value in any way comparable to the pernicious and negative educational value hitherto enjoyed by the term "cold."

The term "chill," perhaps, is more often used to designate a rise of temperature and slight malaise without definite catarrhal signs, and "febricula" would seem to be a suitable and more convenient term, "infective" being affixed if desired.

It will doubtless be asked, "What's in a name?" and be argued that the present terms are short, convenient, and hallowed by tradition. Our reply is that there is a very great deal of harm in any name implying a false etiology. In fact, we would say that as long as these affections are called "colds" and "chills" there is not much chance of getting them treated generally on common-sense lines. If the public had been educated to the point of treating "a bad cold" on the fresh-air plan before the onset of the recent epidemics of influenza, it is probable that many thousands of lives would have been saved.—We are, etc.,

N. I. SPRIGGS.
C. KILLICK MILLARD.

Leicester, May 28th.

TENDON TRANSPLANTATION IN DROP-WRIST DUE TO NERVE INJURY.

SIR,—In the BRITISH MEDICAL JOURNAL, June 7th, Captain Vernon Pennell, R.A.M.C., publishes a paper on this subject. The problems presented by this procedure cannot be discussed within the limits of a letter, but while I am in agreement with much of his communication there is one point on which I desire to offer some comments.

Amongst the conditions for which he advocates tendon transplantation in preference to nerve suture are "all cases of division of the posterior interosseus nerve." These are included chiefly on the score of difficulty in finding and dealing with the nerve. While it is true that the majority of such cases present conditions which render nerve suture impossible, there are others in which it is feasible, and in these I think it should always be performed in preference to operations on the tendons, provided the muscles have not been seriously injured or very extensively wasted.

I have performed suture of the posterior interosseus nerve in two cases, in each with complete success. In one case the nerve had been severed in its course through the supinator brevis muscle on the outer and posterior aspect of the radius; in the other it was involved in a dense scar immediately below the division of the musculo-spiral into its posterior interosseous and radial branches. Both cases were treated by end-to-end anastomosis. In each case clinical signs of regeneration appeared within three months of operation, followed later by perfect recovery of function in wrist and fingers.

Owing to the small size of the nerve the operation is not simple, and it requires considerable delicacy of technique, but the results in these cases show that success may be achieved. Tendon transplantations in cases of drop-wrist, while yielding gratifying results and enormously improving the use of the hand, are, in my experience, never followed by the complete restoration of function which results from successful nerve suture, and are at best only palliative measures. When the local conditions are favourable I suggest that an attempt should be made to suture the nerve.

In regard to Captain Pennell's suggestion that tendon transplantation at the wrist may be performed at the same time as suture of the musculo-spiral nerve in the arm, a number of considerations arise which I shall not discuss here. Personally I have not adopted the procedure in any case.—I am, etc.,

WILLIAM PEARSON, F.R.C.S.I.,
Late Major R.A.M.C., and a District Consultant Surgeon.

Dublin, June 9th.

OPTIONAL OR COMPULSORY GREEK AT OXFORD.

SIR,—We, the undersigned, members of the Board of the Faculty of Medicine, teachers in the medical school, and resident medical graduates, appeal to all Oxford medical graduates who are members of Convocation* and are opposed to compulsory Greek to come to Oxford on Tuesday, June 17th, and by their votes in Convocation, at 2 o'clock, support the statute rendering Greek *optional* in Responsions.—We are, etc.,

ARTHUR THOMSON, Exeter College; Professor of Human Anatomy.
A. P. DODDS-PARKER, Magdalen College; Lecturer in Applied Anatomy.
S. E. WHITNALL, Magdalen College; University Demonstrator in Human Anatomy.
C. S. SHERRINGTON, Fellow of Magdalen College; Professor of Physiology.
H. C. BAZETT, Fellow of Magdalen College; Welch Lecturer in Clinical Physiology.
G. DREYER, Fellow of Lincoln College; Professor of Pathology.
E. W. AINLEY WALKER, Fellow and Tutor of University College; Lecturer in Pathology.
A. G. GIBSON, Christ Church; Lecturer in Morbid Anatomy.
A. D. GARDNER, University College; Bacteriologist, Students' Laboratory, Department of Pathology.
J. A. GUNN, Queen's College; Professor of Pharmacology.
S. H. VINES, Fellow of Magdalen College; Professor of Botany.
G. C. BOURNE, Fellow of Merton College; Professor of Zoology and Comparative Anatomy.
W. H. PERKIN, Fellow of Magdalen College; Professor of Chemistry.
D. H. NAGEL, Fellow and Tutor of Trinity College.
W. COLLIER, Exeter College; Honorary Physician Radcliffe Infirmary.
W. T. BROOKS, Christ Church; Litchfield Lecturer in Medicine; Honorary Physician Radcliffe Infirmary.
R. H. ANGLIN WHITELOCKE, Lincoln College; Litchfield Lecturer in Surgery; Honorary Surgeon Radcliffe Infirmary.
C. G. DOUGLAS, Fellow and Tutor in Natural Science, St. John's College.
A. L. ORMEROD, New College; M.O.H. City of Oxford.
E. MALLAM, Magdalen College; Honorary Physician Radcliffe Infirmary.
C. SINGER, Tutor of Exeter College.
G. B. CRONSHAW, Fellow and Bursar of Queen's College; Honorary Treasurer Radcliffe Infirmary.
H. M. VERNON, Fellow of Magdalen College; Investigator to the Industrial Fatigue Research Board.

THE ETIOLOGY OF AORTIC REGURGITATION.

SIR,—I should like to traverse Dr. Theodore Fisher's statement that "there is no evidence that scarlet fever causes endocarditis," from my experience of thirteen years' work in large fever hospitals during which the performance of *post-mortem* examinations on cases of scarlet fever was a routine procedure.

The evidence is as follows:

In children dying during the acute stage of scarlet fever it is quite common to find the valves of either the aortic or mitral orifices swollen and brilliantly injected, with the cusps slightly thickened, lustreless, and sometimes also covered with small flecks of lymph.

* Any Master of Arts or Doctor of Medicine whose name is on the books of his college is a member of Convocation.

On microscopical examination the entire substance of the valve is seen to be infiltrated with leucocytes and organizing fibrin, and in Gram-stained sections micro-organisms are commonly present also. In practice I was always able to demonstrate to my classes at the Manchester University by *post-mortem* examination one or more such cases during each session. There is also clinical evidence, which is in my opinion conclusive, as to the existence of endocarditis in scarlet fever, but I gather from Dr. Fisher's letter that he regards *post-mortem* appearances as a firmer basis for discussion. I shall be interested, therefore, to learn how he would explain those which I have described, and which I submit are familiar to the residents in every large fever hospital.—I am, etc.,

London, W.C., June 5th. A. KNYVETT GORDON.

LIQUOR CONTROL.

SIR,—I trust the Council of the Association will agree to the suggestion contained in Dr. Collier's letter in the JOURNAL of June 7th. I fully agree with him that our status as a profession would have ranked much higher and our opinions have carried much more weight had we taken a larger share of public work both individually and collectively, and I believe that such a memorial as that which he has drawn up, if largely signed by members of the profession, would exercise a powerful influence on the Government when it comes to decide on the future of the liquor traffic. Those of us who have experienced the benefits of State control do not wish to return to pre-war conditions.

The very excellent annual report of the General Manager of the Carlisle and District Control area, from which I quoted in my article in the JOURNAL of April 19th, has now been published as a parliamentary paper, and copies may be had, price 9d., from His Majesty's Stationery Office through any bookseller. There is also a good summary of the operations of the Board, with several interesting photographs, in a little book entitled *State Purchase of the Liquor Trade*, by Joseph Rowntree and Arthur Sherwell, published by George Allen and Unwin, Limited, London, price 1s.—I am, etc.

Carlisle, June 9th. HENRY BARNES, M.D.

MEDICAL DEMOBILIZATION.

SIR,—With reference to the letter of Dr. Hugh Thursfield in the JOURNAL of June 7th there are other points to which he might have drawn attention in connexion with medical demobilization.

No doubt there are a large number of medical officers who are anxious to be demobilized who have the strong claims of long and good service, family ties, and a practice or appointment to go back to; these men should have the first consideration.

If there is a shortage of medical officers those of us who have served think that this might be met in two or three ways. In the first place the work of many appointments now held by medical officers could quite well be carried on by the attachment of junior combatant officers or even a well educated staff sergeant; such are the regimental duties and various appointments at head quarters and commands. Then, again, there is much overlapping in sanitary duties—a saving in this direction could quite well be carried out. Over-staffed station and general hospitals could be reduced and medical boards could be formed from the staffs of hospitals instead of having officers set apart for this purpose. Regular R.A.M.C. officers should be sent out to relieve the temporary officers who have good claims to be sent home for demobilization. Lastly, there are a large number of medical officers temporarily serving for the period of the war who have lost their practices or appointments and have nothing to go back to and have families to keep and do not desire to be demobilized; these should be retained for a longer period. There are many officers of this last class who have been demobilized and who would gladly come back again.—I am, etc.,

June 7th. "MEDICUS."

INSURANCE TERMS AND CONDITIONS (M. 25).

SIR,—We were glad to see the letters on the above subject from Drs. W. Hodgson and James Ormond which appeared in the BRITISH MEDICAL JOURNAL of June 7th. These letters may possibly arouse the profession to what is proposed, before it is too late.

Our representatives have, in our humble opinion, mismanaged the whole negotiations from the start.

Surely, having regard to the present value of money and cost of living, we are entitled to a substantial increase in our capitation fee *without any onerous additions to the conditions of service.* When that is granted, we should then, and not till then, have entered into discussion of fresh conditions of service, for which, of course, an adequate increase should be granted, but irrespective of the first grant.

With regard to the proposed new conditions of service, we cannot occupy your space too much, but do many insurance practitioners realize that under Paragraph 74 they will now be liable to attend not only their own patients but—at any rate in an urban district—*any* insurance patient who sends, night or day, and who alleges his own doctor is not available, and that the matter is urgent? Truly, as Dr. William Hodgson says, life under these conditions will be intolerable.—We are, etc.,

H. A. WATSON.
Worcester, June 10th. W. G. BENNETT.

VOLUNTARY HOSPITALS.

SIR,—The importance of Dr. B. Secretan's letter cannot be overestimated at the present time, when hospital boards are at their wits' end to know how to raise the money to finance their institutions. What is to take the place of the thousands lately subscribed by the War Office for attendance upon wounded soldiers? There may be the pensioners for some time. Here comes in the revelation of Dr. Secretan.

I wish he would explain the following quotation from his letter: "They (the voluntary hospitals) minister to the needs of paupers, those of moderate means with an income above a certain limit being looked upon, and rightly so under present circumstances, with disfavour." Now for the revelation.

The pauper cases would be treated gratuitously. As much money as possible would be squeezed out of those not able to go to expensive nursing homes. There is to be a graduated scale of payments. If they pay, they are to be supplied with "those refinements to which they should be entitled," the supply of refinements to be graduated, naturally, according to the amount of payment. Of course the "paupers" cannot expect any refinements, which, besides, they would be unable to appreciate.

The hospital will find it rather expensive dividing the patients into the different grades of affluence. The hospital is to reflect the different classes in our plutocratic kingdom, and the honorary members of the staffs are to share in the spoil. It is to be hoped that they will get their fair share. Up to now they do not seem to have got much of the money supplied by the War Office for attendance upon the wounded soldiers. The honorary members have not had the heart or pluck to put pressure upon the boards of our bankrupt voluntary hospitals.

Now that so many general practitioners are on the enlarged staffs of the provincial hospitals the honorary members do not get paid in the same way as they formerly did—that is, by the exclusion of rival practitioners. But the mischief is that all reformers are urging that as many members of the profession as possible shall be brought in contact with the hospitals to raise the general level of medical efficiency. Therefore, Dr. Secretan's scheme is welcome as offering some hope of restoring the lost payment to honorary members of the staffs. It is a first class scheme for the New Democracy, and one likely to raise the self-respect of the citizens of our great empire. We are a nation of shopkeepers saturated with snobbery, whose god is Mammon, and whose devil at the present time is Bolshevikism (whatever that may mean).—I am, etc.,

Wigan, June 3rd. FERDINAND REES, M.D.

THE Iowa Legislature has appropriated £35,000 for the establishment of a psychopathic hospital at the State University. The institution will be open to all sufferers from mental disorders, whether under public or private care. The same legislature has also extended, to include adults, the Perkins law under which an orthopaedic hospital is maintained by the State for the free treatment of crippled children.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

AT a congregation held on June 6th the following medical degrees were conferred:

M.D.—C. F. Searle, C. T. Scott, T. H. G. Shore.
M.B., B.CH.—H. C. H. Bull, G. T. Calthrop.

UNIVERSITY OF LONDON.

THE following candidates have been approved at the examinations indicated:

THIRD M.B., B.S.—‡Annie H. Banks, †§A. J. Cokkinis, ‡D. M. Connan, *†L. S. Debenham, †D. H. Griffen, *J. G. Moseley, *‡§R. J. Perkins (University Medal), §A. E. Sawday, §F. A. St. John, Lena C. Adam, Mary N. Andrews, R. M. Beath, J. E. A. Boucaud, N. St. J. G. D. Buxton, J. Capell, P. S. Clarke, Kathleen M. Cogan, G. F. Cooke, W. E. Crowther, J. H. Dancy, S. C. de Silva Wijeyeratne, G. D. Eccles, P. C. Gibson, M. Gross, E. E. Herga, A. W. Holgate, Mary I. Hounsfield, P. Hudson, P. Hughes, G. M. Jackson, Hassan Kamal, J. N. Leitch, I. H. Lloyd, Alice L. Lloyd-Williams, Kathleen McC. McKeown, Gla ys M. Miall-Smith, A. H. Morley, Enid M. Pfeil, B. H. Pidcock, J. L. Priston, R. W. Revell, H. B. Russell, H. T. Rymer, M. Scott, C. Sherris, Lily D Taylor, B. Thomas, D. C. Thomas, R. F. White, S. C. Woodhouse.

* Distinguished in Medicine.
† Distinguished in Pathology.
‡ Distinguished in Forensic Medicine.
§ Di tinguished in Surgery.

The following candidates have passed in one of the two groups of subjects:

Group I.—Ursula P. Blackwell, Nora A. Crow, E. S. Davies, Florence M. Edwards, Edith C. Hudgell, E. F. Kerby, R. G. Lyster, F. N. Moos, Edith M P. Morris, Dorothy P. Priestley, T. C. Russell, H. W. Southgate, C. H. Thomas, W. Yeoman, W. R. White-Cooper. *Group II.*—I. M. Abd-El-Said, W. M. Anthony, J. A. Birrell, C. H. C. Byrne, J. A. C. Forsyth, R. S. Foss, Muriel M. Kenworthy, G. L. Levin, E. K. Macdonald, C. D. Mait and, M. J. Panthaky, Mary M. Prior, Joan M. Ross, W. R. Rowlands, J. F. Ryan, E. D. Scott, J. W. Wayte.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

AT the monthly meeting of the President and Fellows on June 6th the following were admitted Members of the College: J. Speares, J. T. Wigham. At the same meeting Henry Cooke Drury, M.D., F.R.C P.I., was elected a Physician to attend Sir Patrick Dun's Hospital in the place of the Professor of Institutes of Medicine, who has been exempted by the College from his clinical duties.

Obituary.

GEORGE COOPER FRANKLIN, F.R.C.S.,

LL.D.(HON.), M.B.E.,

Consulting Surgeon, Leicester Royal Infirmary.

BRIEF mention was made last week of the death, on June 2nd, of Mr. G. C. Franklin, consulting surgeon to the Leicester Royal Infirmary and President of the British Medical Association when it held its annual meeting in Leicester in 1905. He was born in 1846, the son of the late Mr. G. B. Franklin, who conducted the well-known school for boys at Stoneygate, Leicester. The son was educated partly at his father's school and partly at Leatherhead. He was a student at St. Thomas's Hospital, where he held the appointments of house-surgeon and resident accoucheur, and always retained a grateful regard for his teachers there, especially Sir John Simon, Mr. Le Gros Clarke, Mr. Samuel Solly, and Sir Risdon Bennett—all now long passed away. He took the diploma of M.R.C.S. in 1870, that of L.R.C.P. in 1871, and the F.R.C.S. in 1873. From 1871 to 1874 he was resident medical officer of the City of London Hospital for Diseases of the Chest. On giving up that appointment he started in general practice in Leicester, deciding to prescribe and not dispense—a course which many of those then in practice in the city considered impossible of success. Mr. Franklin was helped at the beginning by the late Dr. Barclay, but did not enter into partnership. In 1875 he became surgeon to the Leicester Provident Dispensary, but resigned the appointment five years later on account of the growth of his practice, which was concerned largely with midwifery, but included a considerable amount of work in general medicine. In 1886 he was appointed surgeon to the Leicester Royal Infirmary; he retained the post for twenty years, when he retired under the age limit. In recognition of his eminent services to the infirmary he was entertained to dinner on April 25th, 1906, by the medical practitioners of the town and many of the prominent citizens. The late Dr. F. M. Pope, the senior physician, was in the chair, and the principal toast was given by the late Sir Edward Wood, chairman of the board of the infirmary. At the anniversary meeting on March 27th, 1906, Mr. Franklin had been appointed consulting surgeon, and on that occasion a tribute was paid to the services he had rendered during his long period of office, to his distinguished ability, and to his devotion to the best interests of the infirmary. He was surgeon to the Midland and London and North-Western Railways, and vice-president of the paying hospital in Leicester for working-class patients, in the foundation of which he had taken much interest.

When the British Medical Association accepted the invitation to hold its annual meeting at Leicester in 1905 Mr. Franklin was unanimously designated to preside over it. It was a most successful meeting, and much of its success was due to his organizing powers; his geniality made everyone who attended his friend for life. The presidential address he delivered was a thoughtful review of medical education, past, present, and future; he dealt with many questions which are still occupying attention, but in particular with the want of appreciation of the importance of education in obstetric medicine and surgery, a defect for the remedy of which efforts are now being made. He also insisted on the importance of at least a year's service as house officer at some hospital before the new practitioner entered upon independent practice. In 1906 he attended the annual meeting at Toronto; he inducted his successor, Professor R. A. Reeve, and himself received the honorary LL.D. from the university.

Outside the sphere of the medical profession he took a keen interest in the general well-being of his native town, was early in life a member of the town council, and afterwards a J.P. for the borough. He was president of many societies in the town—medical, scientific, and musical—and had passed the chair of the Literary and Philosophical Society. In 1910 failing health led to his retirement from practice and two years later he settled in Fareham, Hants. There he did much public work, was a governor of Price's School, and when the war broke out readily gave his services, becoming commandant and medical officer of the Hawkstone Red Cross Hospital; he was for some time medical officer also of the Lady Keyes's Fareham House Hospital and of the St. John Hospital, Fareham. After the Hawkstone Hospital was closed Mr. Franklin served on the local medical board of the Ministry of National Service. When the Order of the British Empire was established in 1917 Mr. Franklin's name was in the first list as M.B.E. This recognition of his unselfish services gratified him, but the strain upon a constitution already impaired was too great, and for some time before his death he had been laid aside by heart failure.

Mr. Franklin is survived by Mrs. Franklin, two sons, and two daughters; his sons are Major G. D. Franklin, I.M.S., and Commander H. G. C. Franklin, R.N. The funeral, which took place at Fareham on June 5th, was largely attended by representatives of the medical profession and by many of those who worked with him in the war hospitals.

DEPUTY SURGEON-GENERAL WILLIAM CATTELL, R.A.M.C. (retired), who died on March 20th at the age of 89, was one of the last survivors of the Crimean war. He was born at Castle Bromwich, Warwickshire, on November 23rd, 1829, and took the M.R.C.S. in 1853. He entered the army as assistant surgeon on March 28th, 1854, became surgeon on March 28th, 1866, surgeon-major on April 1st, 1873, brigade surgeon—when that rank was first instituted—on November 27th, 1879, and deputy surgeon-general on March 12th, 1882. He retired on November 23rd, 1889. In the regimental days he served successively in the 5th Dragoon Guards, 1854 to 1864; on the staff, 1864 to 1866; in the 20th Foot, the Lancashire Fusiliers, 1866 to 1872; and in the 10th Hussars from 1872. He served in the Crimea with the 5th Dragoon Guards, and took part in the battles of Balaclava, Inkermann, Tchernaya, and the siege of Sevastopol, receiving the medal with three clasps, and also the Sardinian and Turkish medals. In the Afghan war, 1878–79, he served with the 10th Hussars, was present at the capture of Fort Ali Musjid and the action at Futchabad, and received the medal and clasp.

LIEUT.-COLONEL JAMES GRAHAM HOJEL, Bombay Medical Service, died of heart failure at Bombay on March 21st, aged 55. He was the son of the late Brigade-Surgeon A. N. Hojel, I.M.S., and was educated at Trinity College, Dublin, where he graduated B.A., M.B., and B.Ch. in 1886. Entering the I.M.S. as surgeon on March 31st, 1888, he became major on March 31st, 1900, lieut.-colonel on March 31st, 1908, and was placed on the selected list on April 15th, 1911. He was for some years civil surgeon of Ahmadnagar, and latterly surgeon to the Gokuldass Tejpal Hospital in Bombay. During the war he also had charge of Lady Hardinge's hospital, and of the Gerard Freeman Thomas war hospital in Bombay. He received the C.I.E. on January 1st, 1917.

SURGEON-MAJOR GEORGE ALLAN HUTTON, R.A.M.C. (ret.), died at Leamington, on April 21st, aged 85. He took the diploma of M.R.C.S. in 1852, and entered the army as assistant surgeon on June 23rd, 1854, being promoted to surgeon in 1866, and retiring on September 3rd, 1874. Most of his army service was spent in the Rifle Brigade, in which he served in South Africa, in Canada with the Trent expedition, and in the West Indies, but saw no war service. Soon after retiring he took up the work of the St. John Ambulance Association, of which he became organizing commissioner about 1879, and held that post for about twenty-five years. He was twice married, and leaves a widow, three sons, and three daughters. His eldest son, in the navy, recently attained the rank of rear admiral.

BRIGADE SURGEON THOMAS CAMPBELL TOLMIE, R.A.M.C. (retired), died at North Finchley on May 12th, aged 79. He was educated at Glasgow, took the diplomas of L.F.P.S.G. in 1861 and L.R.C.S.Edin. in 1866, and entered the army as assistant surgeon in 1867, and retired in 1887. In the regimental days he was medical officer of the 92nd Foot, now the second battalion of the Gordon Highlanders. He served in Egypt in 1882, at the battle of Tel-el-Kebir, and received the medal with a clasp, and the Khedive's bronze star; and in the Sudan in 1885–86, as secretary to the P.M.O. of the Frontier Field Force, was present in the action at Giniss, and received a clasp.

CAPTAIN EUSTACE MACARTNEY PARSONS-SMITH, R.A.M.C., died suddenly at Khartoum on May 28th, aged 34. He was the youngest son of the late Dr. Parsons-Smith of Croydon, and was educated at St. Thomas's Hospital, taking the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1908. After acting as clinical assistant in the Children's Medical Department at St. Thomas's, he entered the R.A.M.C. as lieutenant on January 30th, 1909, and became captain on July 30th, 1912. He joined the Egyptian army—in which he held the rank of Bey at the time of his death—on May 11th, 1911, and received the Order of the Nile on August 31st, 1917.

SURGEON LIEUTENANT EDWARD GARLICK FISHER, R.N., died at the end of May. He was educated at the universities of Cambridge, where he graduated B.A. with honours, and Liverpool, and at St. Thomas's Hospital, and took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1912. After filling the posts of house-surgeon of special departments, of casualty officer, of senior house-physician, and of senior resident medical officer at the Royal Infirmary, Liverpool, and of clinical assistant at the Liverpool Consumption Hospital, he became medical registrar and tutor at the Liverpool Royal Infirmary, and held that post when the war began. He took a temporary commission as surgeon in the navy on August 7th, 1914, three days after the declaration of war.

ASSISTANT SURGEON ERNEST HUGH BOILARD, M.C., I.M.D., died at Campbellpur, Punjab, on March 29th, aged 38. He was born on July 13th, 1880, and joined the department on November 3rd, 1904. He received the Military Cross on January 14th, 1916. Previous to the war he was employed on plague duty in the Central Provinces.

LIEUT. JUGUL KISHORE SHARMA, Indian Medical Service, was reported as having died on service, in a casualty list published on May 17th. He received a temporary commission in the I.M.S. on November 26th, 1917.

Medical News.

THE Prince of Wales has become president of King Edward VII Hospital, Cardiff, and of the Victoria Hospital for Children, Chelsea.

WE regret to record the death of Sir Barclay J. Baron, the well known Bristol laryngologist, who was recently Lord Mayor of Bristol. We expect to publish an obituary notice in an early issue.

INFLUENZA is reported to have wrought great havoc in the South Sea Islands. About 8,000 deaths occurred in German Samoa, two-thirds of the victims being men. There was also great loss of life in Fiji, Tonga, and Tahiti. Mauritius also has suffered recently from the disease.

THE Council of the Order of Medical Practitioners of the Province of Rome has called the attention of the Italian Government to the prevalence of the abuse of cocaine. Severe penalties have been imposed for the clandestine sale of the substance.

THE annual general meeting of the Medico-Legal Society will be held at 11, Chandos Street, Cavendish Square, W.1, on Tuesday, June 24th, at 8.30 p.m., when the council will propose the election of Mr. R. Henslowe Wellington to be president. The honorary secretaries of the society are Mr. E. Goddard and Dr. Spilsbury. At an ordinary meeting, which will follow, Dr. Lionel Weatherly will read a paper on the interpretation of Sections 47 and 321 (ii) of the Lunacy Act, 1890.

DURING June and July four courses of lectures will be given at the London Hospital Medical School. The first, a course of ten lectures by Dr. P. N. Panton, director of the clinical laboratory of the hospital, on routine laboratory methods, began on June 11th at 4.15 p.m.; the second course, four lectures by Dr. Charles H. Miller, assistant physician to the hospital, discussing gunshot wounds of the chest, influenza, and dysentery, from the point of view of the military physician, began on June 12th at 12.15 p.m. Dr. O. Leyton, physician to the hospital, will lecture on June 16th and 23rd, at 4 p.m., on the treatment of diabetes in children and adolescents, and on July 9th at 4.15 p.m. All the courses are open to members of the profession on presentation of their cards.

THE Local Government Board announces that the Inter-Departmental Committee on Tuberculosis amongst Discharged Soldiers and Sailors hopes to report soon after Parliament reassembles. The Committee, of which Sir Montague Barlow, M.P., is chairman, has held nine meetings and heard a large amount of evidence from Government departments, local authorities, directors of sanatoriums and of colonies for disabled men, and from soldiers' organizations. The Committee consists of Dr. Nathan Raw, M.P., Sir Owen Thomas, M.P., Sir Kingsley Wood, M.P., and representatives of the Local Government Boards for England, Scotland, and Ireland, the National Insurance Commissions for England and Ireland, the Board of Agriculture, the Ministry of Labour, and the Ministry of Pensions.

THE processes of crushing, grinding, and sieving refractory materials containing not less than 80 per cent. silica (SiO_2), and any processes involving the manipulation of such materials in the manufacture of bricks or other articles, have been certified to be dangerous under the Factory and Workshop Act, 1901. The Home Secretary has consequently issued regulations for such industries. They require that no such materials shall be broken by manual labour except in the open air, and that a stone-crushing or grinding machine must be provided with an exhaust draught, have an efficient water or steam spray or other arrangement to prevent the escape of dust, and be entirely closed. Respirators must be provided for persons engaged in certain manipulations.

In November, 1916, when the free territory of Belgium was reduced to a small strip in Flanders, the Medical Department of the Belgian army was the rallying point of the members of the various medical faculties of Belgium. With their aid the *Archives Médicales Belges*, which had been committed by the army to the care of Drs. Stassen and Voncken, continued to present to the allied nations a conspectus of the work their Belgian *confrères* were doing. Down to the end of 1918 the monthly numbers were published in Paris. At the beginning of this year it was possible to transfer the printing of the periodical to Liége, and it is now published there as well as in Paris. With the freeing of Belgium the editors have been able to enlarge the list of their contributors, and the periodical now has the assistance of members of all the medical faculties in Belgium. By its original articles and abstracts it presents a picture of the progress of the medical sciences in that country.

Letters, Notes, and Answers.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

The postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2631, Gerrard.
2. ACTING FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London;* telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

LETTERS, NOTES, ETC.

BENZOL FOR MOTOR CARS.

THE Automobile Association states that it has been informed by the National Benzol Association that the price of benzol conforming to the A.A. specification is 2s. 9d. a gallon in two-gallon tins, and that it is hoped the price may be reduced in the future. To-day it compares with No. 1 petrol at 3s. 1d. a gallon (at most garages). The Automobile Association calculates that 15 per cent. more mileage can be obtained from benzol than from the best petrol.

THE ABSURDITY OF PRESENT VIVISECTION REGULATIONS.

"EAST INDIA" writes: While at home on leave in 1914, owing to a vacancy at the Cambridge Addenbrooke's Laboratory, I took temporary charge. Amongst my duties I had to do Wassermann tests which require a small quantity of fresh guinea-pig's blood to provide the complement, and as the only positive test for tuberculosis guinea-pigs had to be injected occasionally with suspected matter to see whether they developed the disease. Until I could secure a licence from the authorities, which took many weeks to obtain, I had to carry "Jackie," my pet guinea-pig, in my pocket from laboratory to laboratory to find a licence-holder who would prick his ear for me, so that I might take a small capsule of fresh blood back with me to my laboratory and then go on with my work. After my licence arrived, "Jackie," when required, was put upon the table, and when I was ready would come to call, squat while his ear was pricked and blood taken, receive his tit-bit, and go off to the far end of the table to enjoy it. This is an illustration of the cruelty which a licence guards against and of how work is held up by absurd regulations framed by politicians who pander to the numbers of ignorant people who, knowing nothing of the necessity for this sort of thing, call out about the cruelty of experiments on animals. Infinitely better introduce a bill to prevent the use of a horse or dog whip. The same crowd accept anti-serum treatment for themselves and their families—for example, diphtheria anti-serum—probably without knowing that this sure treatment of a once very fatal disease can only be produced by "vivisection."

Your article on the "Dogs' Protection Bill" has caused me to write this, for I think a simple statement of how one's work is hampered by absurd regulations may open the eyes of unthinking supporters of a bill which can do nothing but harm to the scientific side of medicine, which the war experience we have just come through has so amply justified. In previous years our original ideas, hampered by English legislation, had to go over to Germany to be worked out, eventually being produced with German names attached and our original thinkers' work smothered. Surely we know better now than to force our best men back to Germany because their original work cannot be developed in England.

TREATMENT BY CORRESPONDENCE.

AN inquest was held at Kensington, on June 5th, on the body of Mrs. Kennard, aged 46. The widower stated that while living in Brazil his wife consulted a throat specialist. She joined him in England in April, and went to the Alabone Institute in Highbury Quadrant, where she filled up a form and was supplied with apparatus for spraying the throat, and given medicine. He paid twelve guineas, but she was never seen by anyone from the Institute. On May 31st, as she was worse, he wrote to the Institute saying that the doctor who had her case in hand must come and see her, but on the following night he had to call in a local doctor, and death took place on June 2nd. In reply to the coroner, witness said he was under the impression that the doctor at the Institute was a qualified man. Dr. J. N. d'Esterre said that the woman was dying when he was called in on June 1st. The coroner asked whether he thought that treatment by correspondence was a reliable and safe method, to which the witness replied, "Certainly not." Dr. Spilsbury said death was due to tuberculosis accelerated by slow starvation from inability to swallow. He had seen Mrs. Kennard's papers from the Alabone Institute, and the treatment was quite inadequate for one in her condition; treatment by correspondence was never satisfactory. The emaciated state of the body was due to slow starvation from want of proper diet and surgical and medical treatment. The coroner said he intended to call the attention of the proper authorities to the husband's statement that he judged the Institute to be always under the direction of a duly qualified man. He recorded a verdict of death from heart disease and emaciation, consequent on tuberculous disease, accelerated by want of appropriate medical and surgical treatment.

"MEXICAN CANTHARIDES."

IN a paper read to the Society of Public Analysts recently Mr. T. E. Wallis stated that certain poultry spices and foods contained insects, either whole or powdered, which have been identified as consisting mainly of species of *Notonecta* and *Corixa* coming from Mexico; he stated that the insects also form a regular article of commerce, and have been sold under the name of "Mexican cantharides." We had not previously heard of this article of commerce, and can find no reference to it. The number of blistering insects containing cantharides or some closely allied substance is large. The *British Pharmacopoeia* allows species of mylabris as well as cantharis to be used. Many species of mylabris occur in China and Eastern India, and the India and Colonial addendum of the *British Pharmacopoeia*, 1898, contains a series of preparations made from *Mylabris phalerata*, but other species of mylabris containing an equivalent amount of cantharidin may be used.

A MIDWIFE'S OFFICE REGISTER.

WE have received from Dr. John Hunter of Motherwell a copy of the *Office Register of Midwife's Transactions*, compiled by him for the use of medical officers of health and inspectors of midwives. It is designed to provide the means for keeping in the central health office an accurate and up-to-date individual record of each midwife—her personal and professional particulars, the inspections by the supervisor of midwives, and particulars of the various notifications to be made by the midwife to the medical officer of health. It is the result of Dr. Hunter's experience as acting M.O.H. and inspector of midwives for Motherwell during the past two and a half years. He has found it useful in keeping in close touch with nearly 100 midwives of varying professional capacity—from the ancient "handy woman" to the modern maternity nurse with full hospital training. The first page is intended to record complete general particulars of the midwife. The next five pages provide space for entering the results of the regular inspections of the midwife and her equipment and dress by the supervisor. Two pages are provided for the recording of cases in which the midwife has had to send for a doctor in accordance with the rules of the Central Midwives Board. One page gives a record of notifications of ophthalmia neonatorum, and a complete column is given for recording puerperal fever cases, deaths before the arrival of a doctor, stillbirths, dead bodies laid out, the substitution of artificial for breast feeding, and the liability of the midwife to be a source of infection. There is sufficient space for ten years' entries. When the midwife's name is written on the outer cover the booklets can be filed on the card index system in an 8 in. × 5 in. file. They can be purchased from Messrs. James Gray and Son, Brandon Street, Motherwell, for 1s. each.

CHINESE DOCTORS IN BRITAIN.

THE *National Medical Journal of China* (December, 1918) states that the first Chinaman to obtain a hospital appointment in Europe was Dr. Lin Boon Keng of Singapore, who was selected to be a house-physician in the Edinburgh Royal Infirmary some twenty years ago. Next came Dr. G. L. Tuck, who held appointments both at St. Mary's, London, and at the Brompton Hospital for Consumption. Afterwards, other Chinese doctors held similar posts—S. P. Chen at Cambridge, C. C. Wong at Edinburgh, Arthur Woo and W. L. Nen in London. Of the teaching staff of the newly organized Union Medical College (Rockefeller School) at Peking eight of the possible twenty-six are Chinese.

THE following vacant appointments of certifying factory surgeons are announced: Birkenhead (Cheshire), Chapel-en-le-Frith (Derby), Churchill (Donegal), Manorcunningham (Donegal), Sheerness (Kent), Turriff (Aberdeen).

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